MAY 1, 1961

PAPER TRADE JOURNAL

Drop Leg Becomes Part of Press Section on Sorg's Rotoformer

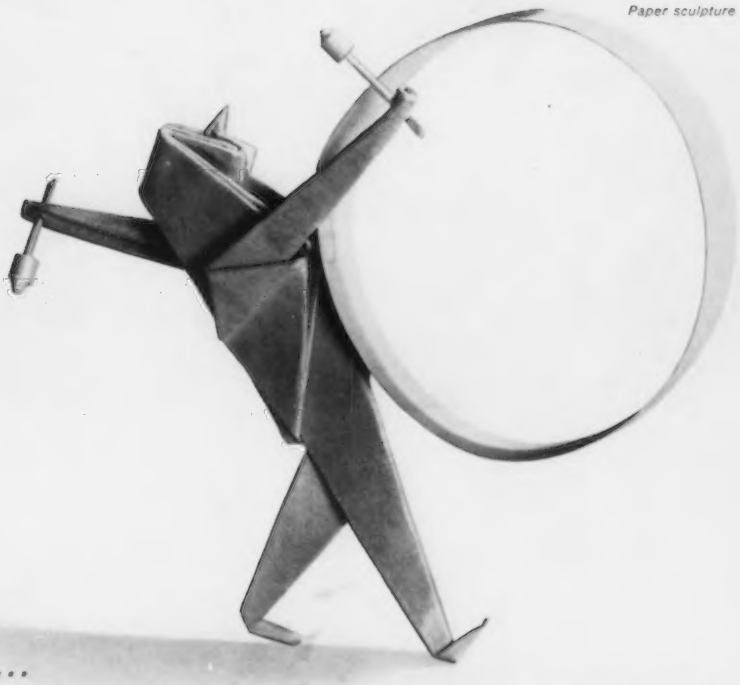
How Magazine Grinders Prefer A Particular Kind of Attention

Variety of Uses Found for Cold Soda Pulps, Many Others Promised

Progress is Vital, Says Buckeye, And Research Provides the Key

Contents of the Week, pages 4-5

Paper sculpture by Giuseppe Baggi



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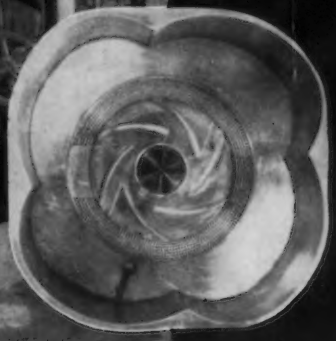

Lobe-shaped, tapered tub walls, conical bottom, heavy, balanced action bottom rotor and extraction plate.

TRIPLE ATTACK

"THIS PULPER has exceeded our fondest expectations of what a pulper would do," reports an engineer at a large mid-western paper company.*

No wonder! Since an Emerson Triple Attack Pulper was placed in service at this mill, the time required to break up wet strength broke has been cut from 6 hours (beater) to 1¼ hours. Power consumption dropped 400% — from 25 HP/Tons/Day to 6¼ HP/Tons/Day. Slushing took 2 hours in a beater. Now, the pulper does it better in 40 minutes.

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The Emerson Triple Attack Pulper is noted for its thorough, uniform defibering in the shortest cycle time. This is achieved by advanced engineering that combines a lobe-shaped, tapered tub wall, conical bottom and heavy, balanced action, bottom rotor. In operation, four stock flows are developed which form an interweaving, overlapping pattern with no "dead spots." All fibers in every charge receive an equal share of the applied energy. *Triple attack* pulping results from 3 distinct defibering actions — impellor to fiber, fiber to tub wall, and fiber to fiber.

Emerson Triple Attack Pulpers come in nine sizes — 100 to 8000 lb. units. Each unit defibers virgin or waste stock at 8% to 12% consistency and delivers fast, uniform defibering with a minimum of required energy.

For full information on how the Emerson Triple Attack Pulper can help you improve production and cut operating costs, get in touch with The Emerson Manufacturing Co., Division of John W. Bolton & Sons, Inc., Lawrence, Massachusetts.

*Name on request.

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PAPER TRADE JOURNAL

PUBLISHED WEEKLY SINCE 1872

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Week of May 1, 1961
Vol. 145, No. 18

FEATURED THIS WEEK

Buckeye Marks 40th Year in Pulp Research

One of the largest and most complete research centers in the industry successfully backs up Buckeye's belief in research for progress. **20**

New Sorg Press Section Met Stiff Requirements

Designed to handle the output of one, two or three Rotoformers, this clearly designed press section embodies a maximum amount of flexibility. **23**

What You Should Know About The Care and Use of Magazine Grinders

Here is an extensive and practical manual especially concerned with the interaction of operation and maintenance of magazine and Great Northern grinders. It contains complete discussions on its various components, including the mounting of pulpstones—F. D. Hartley **24**

Comparing Chemi-Mechanical Pulps: How They Are Used

Data is presented evaluating cold soda, chemigroundwood, Stora-Brite and other processes. Their use in various grades of paper and board are described—A. von Koeppen **30**

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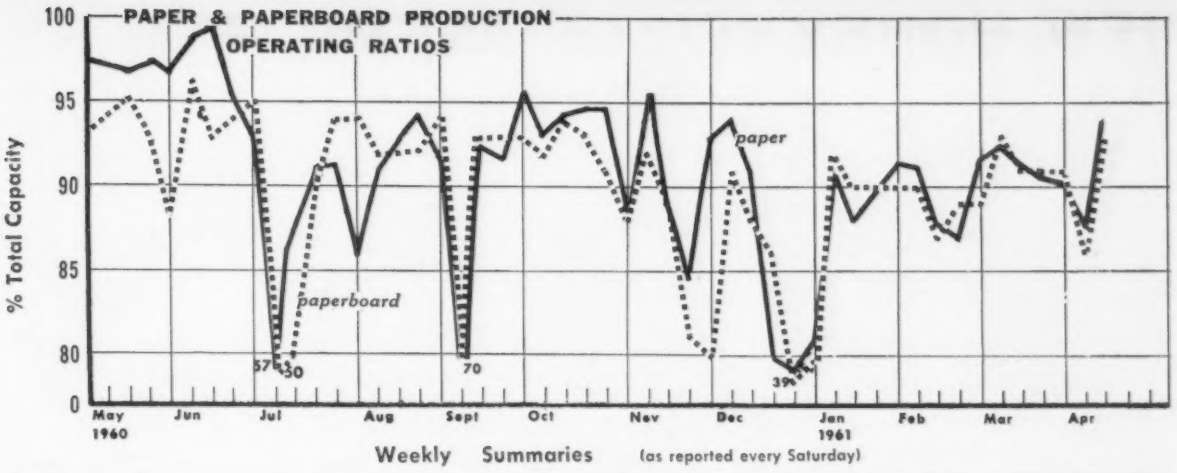

NEWS OF THE WEEK

Federal to Install New High Speed Five Unit Inverform . . . New Pulp Mill Reported for B. C. . . . Japanese May Have Cure for Lignin 'Headache' . . . First Commercial Polyethylene Latex to Offer New Potential for Paper . . . Russia Increasing Purchases of Pulp Paper Machinery

Rayonier Elects Vice Presidents . . . Changes Announced at St. Regis . . . A.N.D. Announces Appointment . . . Columbia Cellulose and Celgar Name V-P's . . . Marathon Southern Appoints Six

Downing Box to Erect Twin Cities Plant . . . Armour-Box Corp. Formed in Buffalo . . . Paper Manufacturers Opens Third Plant . . . Sealright to Construct New West Coast Factory . . . . . .

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REMEMBER THESE DATES

Technical Ass'n of the Pulp and Paper Industry, 12th Annual Coating Conference, Statler-Hilton, Buffalo, N. Y.	MAY 8-10
Paper Industry Management Ass'n National Meeting, Robert Meyer Hotel, Jacksonville, Fla.	JUNE 7-9
Canadian Pulp and Paper Ass'n Technical Session Summer Conference, Saranac Inn, Saranac, N. Y.	JUNE 7-9

NEW HONEYWELL TRANSMITTERS

New bellows flow transmitter

gives all the economy and convenience of pneumatic transmission and all the efficiency of the bellows meter body with the added option of field indication. The transmitter has 16 ranges (0-10 to 0-400 inches of water) and is used to transmit flow or liquid level measurements in open or closed tanks.

Transmitter Features: Make range changes in the field simply by replacing a single spring assembly. You can adjust damping quickly and accurately while the instrument is in operation. You can install meter with vertical or horizontal piping, so that it vents, drains and purges itself.

New temperature transmitter

offers thermal system options with ranges from -125° to 1000°F. Completely new, completely flexible, this transmitter gives you a choice of either mercury or gas actuated thermal system with a wide selection of measuring bulb styles.

Transmitter Features: Mount transmitter on a pipe welded to flow line or on a bracket that clamps to hex head of socket. Vibration resistant thermal system means accurate measurement on vibrating flow lines.

Added Features of both Temperature and Bellows Flow Transmitters include: automatic ambient temperature compensation; two-way overload protection for 100% of span; modular construction for simplified maintenance; self-locking feature to prevent upset; die-cast aluminum case 4″ x 7″ x 9″; available with concentric scale or as non-indicator; transmission accuracy ±0.5% full scale; accuracy of indication ±1% full scale.

For more complete details on the new Temperature and Bellows Flow Transmitters, call your nearby Honeywell field engineer. Or write MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa. In Canada, Honeywell Controls, Ltd., Toronto 17, Ontario.

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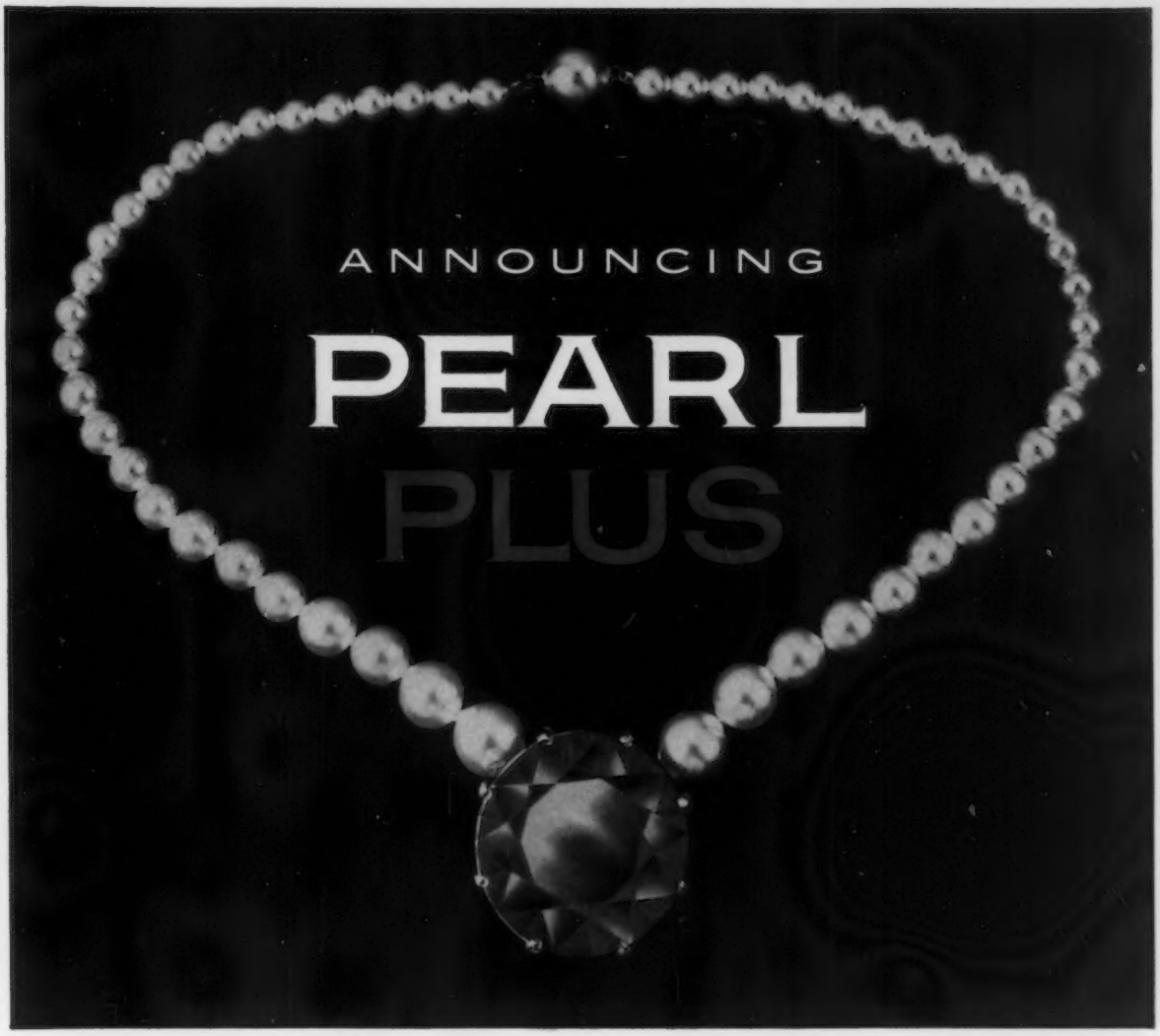

improved enzyme converting starch

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PEARL PLUS requires appreciably less enzyme to convert to a given viscosity than regular enzyme converting starches. Converts at higher solids. Converts more rapidly, often eliminating temperature holding cycle. Standardizes quality with more consistently uniform final viscosities after conversion.

PEARL PLUS is an important new development in improving cost-quality relationships. It has been thoroughly proved in extended mill runs. We'd be pleased to discuss its advantages with you more fully.

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Trends

Editor Evans Report: Dateline—London

Vigorous Health of British Paper Industry

Strong health of the British paper and board industry is shown by the fact that despite a mild recession during the winter many grades of paper and board hit new high levels of production in the first three months of 1961. Further proof of the vigorous state of the British paper economy is shown by the fact that imports of pulp in the first three months of this year were running approximately 10% ahead of those for the same period in 1960! ! ! !

Felt and Plastic Wire Progress

Two British felt manufacturers are aggressively pursuing the development of plastic fourdrinier wires. Although they have trial wires operating on commercial machines, development does not seem to be as far advanced as Formex in the United States. British bronze wire manufacturers like their American counterparts seem to be ignoring this new trend. Press felt makers in Britain appear to be extremely busy at home coupled with a very large volume of export business. When visiting one felt mill, I saw felts being made for more than 20 countries, some as far away as India and Australia, and with most European countries represented.

Waste Paper Developments in Great Britain

Waste paper is most important to British paper and board mills since virtually all wood pulp used has to be imported. Therefore, contrary to what is happening in the United States, waste paper consumption is rising. At the same time waste paper merchants are seeking to increase their exports. The problem of troublesome material in waste paper is no less a problem here than in America. An interesting educational effort in this connection has been undertaken by the British Waste Paper Utilization Council in conjunction with the Waste Paper Merchants' Ass'n. They are sponsoring regular tours around the country by the British Paper and Board Research Assn's mobile laboratory. The purpose of the laboratory is to show the difficulties encountered when "pernicious contraries" are present in waste papers and to demonstrate quick identification methods for their detection.

Mills Seek to Meet EFTA Problems Head-on

In view of the problems presented to the British paper industry by EFTA (see Trends, April 3, 1961) the companies are taking aggressive steps to meet these. Mills are modernizing and stepping up their output, and at the same time greater efforts are being made to increase their export business.

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Are your rosin size costs too high?

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Whether your mill uses rosin or fortified-rosin sizes, Nopco can show you how to reduce your sizing costs by using its wax sizes. In addition to saving you money, Nopco Wax Sizes impart improved resistance toward water, ink, lactic acid, alkalis and blood; improve gloss, smoothness and printability; and decreases fuzz, curl and brittleness.

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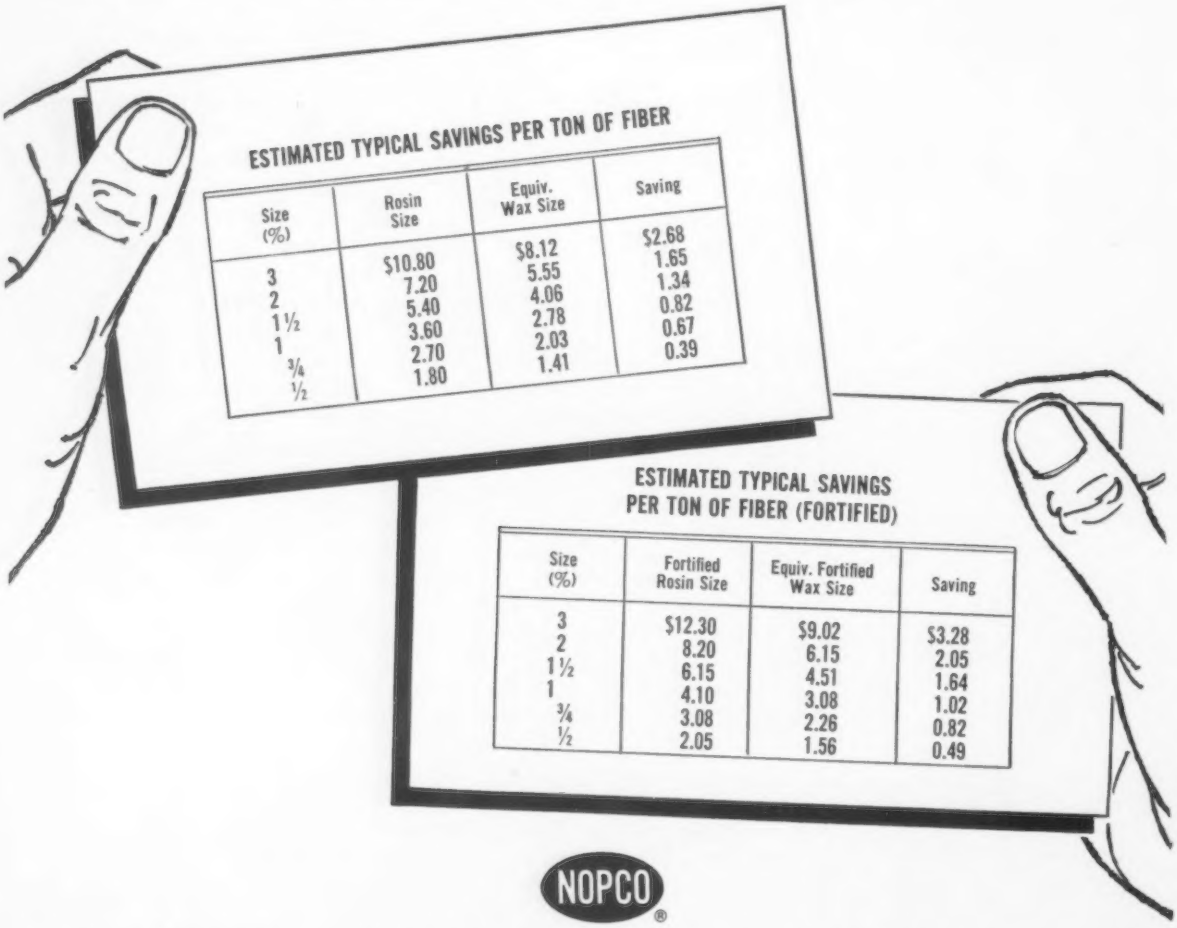
Our Technical Service Engineers, utilizing over 30 years' experience with wax sizes, are ready to show you the advantages to be gained by the use of wax sizes in conjunction with rosin sizes. Write today for further information.


ESTIMATED TYPICAL SAVINGS PER TON OF FIBER
Size (%) | Rosin Size | Equiv. Wax Size | Saving
3 | $10.80 | $8.12 | $2.68
2 | 7.20 | 5.55 | 1.65
1 ½ | 5.40 | 4.06 | 1.34
1 | 3.60 | 2.78 | 0.82
¾ | 2.70 | 2.03 | 0.67
½ | 1.80 | 1.41 | 0.39
ESTIMATED TYPICAL SAVINGS PER TON OF FIBER (FORTIFIED)
Size (%) | Fortified Rosin Size | Equiv. Fortified Wax Size | Saving
3 | $12.30 | $9.02 | $3.28
2 | 8.20 | 6.15 | 2.05
1 ½ | 6.15 | 4.51 | 1.64
1 | 4.10 | 3.08 | 1.02
¾ | 3.08 | 2.26 | 0.82
½ | 2.05 | 1.56 | 0.49

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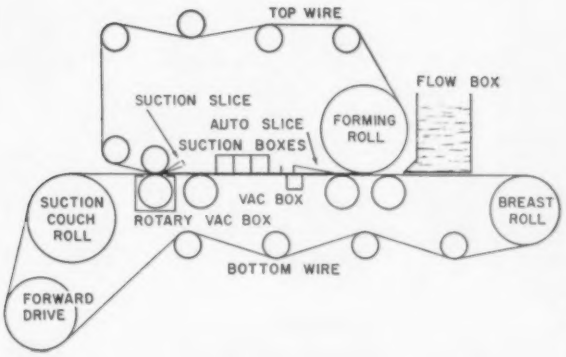
PAPER TRADE JOURNAL
WEEK OF MAY 1, 1961



BASIC PRINCIPLE of the Inverform is shown in this sketch of a one-unit machine.

Federal to Install High Speed Five Unit Inverform

Federal Paper Board Co., Inc., is planning to build a new mill at Versailles, Conn., for producing machine-coated folding boxboard of lighter weight and more uniform quality from both reclaimed and virgin fibres. Plans call for the construction of an approximately 183,000 square-foot plant. Dimensions of the proposed plant are 660 feet long by 273 feet wide.

Incorporated at the new facilities will be a new-type paperboard machine, the first of its kind in the folding boxboard and carton industry of the United States. The project which will begin in May also includes power plant and stock preparation facilities. Present plans call for the plant to be in full operation by the fall of 1962.

The new machine made by Beloit, is a five unit Inverform, trimming 145 inches, designed for the production of paperboard at speeds much higher than the conventional cylinder machine.

Developed in England the Inverform represents a new concept in papermaking. It involves the use of a fairly conventional fourdrinier wire arrangement but includes the addition of one or more top wires running on top of the lower fourdrinier wire. Stock is applied from simple flow boxes and slices located before the in-running nips formed by each top wire unit. (For full description see PAPER TRADE JOURNAL, June 22, 1959).

John R. Kennedy, president, said that the new will is part of the major construction and equipment program, to be financed through a proposed offering of sinking fund debentures. With related facilities, the new mill will cost approximately $15 million. Mr. Kennedy said the new mill will have a capacity of 80,000 tons annually.

Japanese May Have Cure For Lignin 'Headache'

A new process developed by the Noguchi Institute of Tokyo following years of intensive research breaks lignin down into a number of phenolic compounds and neutral oils. It is believed that these will have substantial potential value in the synthetic-chemical industry.

The Crown Zellerbach Corp., which has had much experience in developing several chemicals from kraft and sulphite liquors in its own operations, has bought an option on exclusive American and Canadian rights.

The chief claim for the Noguchi process, according to W. M. Hearon, Crown Zellerbach vice president for research, is that it will enable phenolic compounds to be produced from lignin at costs lower than if coal tars or petro-chemicals are used as a base.

The process can be applied to lignin either from sulphite or kraft liquors, Dr. Hearon says.

To date the Noguchi process has been used only on a pilot-plant basis. Crown Zellerbach plans its own evaluation during an option period.

The option arrangement includes the right to sublicense the process to companies in the U. S. and Canada.

New Pulp Mill Reported for B.C.

Noranda Mines, Ltd. already a major company in the mining field, is now interested in the forestry industry in B.C. John R. Bradfield, Toronto, president of Noranda, is reported by the Vancouver B. C. Province to have confirmed reports current in B.C. that the company is negotiating with National Forest Products, Ltd., an organization of several mills operating in B.C. It is generally assumed the company is planning a pulp mill for interior B.C.

National Forest Products was formerly known as Midway Terminals, Ltd., and was formed recently. The company is understood to own eleven mills with which five forest tree farm licenses are associated. It is stated there would be ample timber reserves for a pulp mill.

Development of a pulp mill in the Prince George area would be aided by a proposal to develop the Peace River, thus establishing ample power supply. The B.C. Government is known to be most anxious to establish pulp mills in the Prince George area where waste products of over 400 sawmill and planer mills could be used. The Government is also interested in a pulp mill to utilize waste from mills in the southern interior of B.C. Experts have expressed belief that Noranda would not be interested in a mere sawmill project but would link its entry into this field with a pulp mill program.

DEMONSTRATING the adherence of "Poly-Em" latex when used in paper coating. Using a strip of cellophane tape in an attempt to separate the coating from the paper, the bond of polyethylene coating to the paper is shown to be stronger than the paper.

First Commercial Polyethylene Latex To Offer New Potential for Paper

Spencer Chemical Co. has announced that it plans to build a plant to produce the first commercial polyethylene latex. Spencer described this latex as a liquid containing 40 per cent solids and said that it should have broad industrial applications, particularly in the polish, textile, and paper industries.

The plant, designed initially to produce latex in excess of 20 million pounds annually, will be located at the site of Spencer's Chicago Works in Calumet City, Ill. Construction is expected to start next month and completion is anticipated near the first of the year. Cost is estimated at more than one million dollars. Spencer has trademarked the name "Poly-Em" and will use it to describe its initial latex product, as well as other latexes it will market later.

The announcement climaxes several years of research effort by Spencer. Semi-commercial quantities of "Poly-Em" polyethylene latex are now being produced in a pilot plant at the company's research center in Kansas City.

Coatings laid down by the new material on paper give good moisture protection and can be printed and heat sealed satisfactorily. Such coatings are being considered as replacements for extruded and laminated polyethylene coating on paperboard and breadwrapping stock. Where desirable, it is possible to apply a very thin coating of this latex with excellent uniformity. The latex is also being evaluated in the paper industry as a beater additive and as sizing.

Russia Increasing Purchases Of Pulp, Paper Machinery

A leading Japanese manufacturer of heavy machinery, Hitachi Shipbuilding & Engineering Co., recently signed a $3.7 million contract with Russia for a semi-chemical pulp plant with a daily capacity of 350 tons to be delivered by December 1963. Payment is being spread over a five-year period but the credit terms have not been disclosed, according to the Journal of Commerce (4/12/61).

This company is also hopeful of getting two more Russian pulp plant orders.

The first is for a pulp mill producing 600 tons a day of unbleached kraft at Archangel and the other a giant 900 tons a day plant at Dobrianko in the Urals.

Another firm, Kobayafhi Engineering Co., has also snagged two large orders worth $10 million for board-making plant.

U. of M. Announces First Summer Institute Program

The University of Maine has announced a technical program for the First Session of the Summer Institute for the Pulp and Paper Industry scheduled for July 10-July 27, 1961.

Although the enrollment date is encouraging there is ample opportunity for applicants for this session. The program follows:

Production of Pulp and Paper—J. C. W. Evans, Editor, PAPER TRADE JOURNAL.

Forest Management — Professor Harold Young, University of Maine.

Structure of Wood—Professor Fay Hyland, University of Maine.

Chemistry of Cellulose and Lignin —Professor Irwin Douglass, University of Maine.

Wood Preparation — The Wood Room—N. P. Warwell, Carthage Machine Co.

Acid Pulping — Acid Preparation —Professor L. C. Jenness, University of Maine.

Acid Pulping—Cooking and Recovery—W. D. Kerr, Fraser Companies, Ltd.

Alkaline Pulping—To be selected.

Recovery Units — V. P. Owens, Combustion Engineering, Inc.

Mechanical Pulping — Professor Fred O'Neil, Syracuse University.

Semi-Chemical Pulping — R. W. Doe, West Virginia Pulp & Paper.

Pulp Screening and Cleaning—Representative, Improved Machinery Co.

Bleaching—Professor H. Papson, University of Toronto.

Pulping Process Costs — F. G. Perry, Jr., A. D. Little. Inc.

Pulp Mill Management Panel — W. H. Chisholm, President, Oxford Paper Co.; R. H. Cutting, president, Keyes Fibre Co.; and M. C. McDonald, president, Great Northern Paper Co.

Blandin Expansion Program Begins

Associated Builders, Inc., Virginia, has begun work on a $1.5 million portion of the total $10 million expansion program of the Blandin Paper Co., Grand Rapids, Minn. The construction includes a large warehouse, a shipping storage and maintenance building and a switch gear building, all to be built north of the present mill structure.

The total program calls for the installation of a new paper machine to be completed by 1964. The complete expansion is expected to increase pulpwood expenditures from $900,000 annually to $1.5 million.

Paper and Paperboard Production

The American Paper and Pulp Association reported the ratio of the United States paper production to mill capacity for the week ending April 15, 1961, at 93.8 per cent, compared with 88.9 per cent, revised, for the preceding week. The ratio was 97.2 per cent for the corresponding week a year ago.

The National Paperboard Association reported the paperboard production ratio for the week ending April 15, 1961, at 93 per cent, compared with 86 per cent for the preceding week and 95 per cent for the corresponding week a year ago.

(Detailed Statistics on page 40)

PAPER PEOPLE

L. J. Forrest

M. A. Brown

Rayonier Elects Vice Presidents

L. J. Forrest and Michael A. Brown have been elected vice presidents of Rayonier, Inc., the chemical cellulose producer. Mr. Forrest manages the Northwest Timber Division and becomes the company's ranking executive in the Pacific Northwest. Mr. Brown is in charge of sales with headquarters at New York.

Mr. Forrest became head of Rayonier's Northwest Timber division in 1958. Under his direction the division carries out extensive forestry research programs. In addition to directing timberland activities in the Northwest, he will look after the company's over-all interests in the Northwest in governmental, industry-wide and public matters.

Mr. Brown, a native of Philadelphia and a graduate of the Wharton School of Finance and Commerce of the University of Pennsylvania, joined Rayonier in 1952.

Changes Announced at St. Regis

St. Regis Paper Co. has appointed R. W. Reed as assistant manager of manufacturing of its Printing Paper Division. Dr. Reed will be directly responsible for the operation and administration of the printing paper mills, reporting to L. J. Smith, manager of manufacturing for the mills of this division.

Functions of technical service to customers, quality control, and mill sales-service for the Printing Paper Division have been transferred from the Technical Division to the Printing Paper Division. Harvey E. Sweetland becomes manager of customer services.

Dr. Reed joined Rhinelander Paper Co., which later became part of St. Regis, in 1948 as research director and functioned in management posts in technical, operations and sales capacities until his transfer to St. Regis in 1957 as executive engineer —long range planning. He is a graduate of the University of Rochester and the Institute of Paper Chemistry, Appleton, Wis.

In 1928, Mr. Sweetland joined Bryant Paper Co., which later became part of St. Regis. He has been supervisor of technical service to customers - printing papers since 1956.

Donald M. Ferguson has been appointed acting director of the Technical Services and Control department. He reports to Thomas A. Hewson, assistant vice president - technology.

A.N.D. Announces Appointment

W. S. Budgell will assume the position of acting assistant superintendent of the mechanical department at Anglo - Newfoundland Development Co., Ltd., according to Robert Brown, mill manager.

Columbia Cellulose and Celgar Name V-P's

A. E. Penney has been appointed executive vice president of Columbia Cellulose Co., Ltd., and Celgar, Ltd. Mr. Penney, who joined Columbia Cellulose and Celgar in 1956, previously held the position of vice president, pulp manufacturing.

Mr. Penney graduated from the University of Toronto with a degree in chemical engineering in 1937. He then joined the bleached kraft pulp mill of the Brown Corp. in La Tuque, Quebec, where he became general superintendent. After five years of war service in the Engineering Division of the Canadian Army, he became manager of pulp and paper manufacturing in the kraft and sulphite pulp and paper operations of Brown Co., Berlin, N. H., where he remained until he joined Columbia Cellulose and Celgar.

Also announced was the appointment of Ian A. Barclay as vice president and secretary of the companies. Mr. Barclay has been with these companies in Vancouver since 1952. He is a graduate of Harvard (M.P.A.) and the Faculty of Law, McGill University (B.C.L.).

A. E. Penney

I. A. Barclay

F. W. Nienow

Tom Orr

J. C. Marquardt

J. W. Olfson

G. A. Arendt

Keith Campbell

Marathon Southern Appoints Six

Recent promotions and appointments in Marathon Southern Corp.'s pulp, paper, and converting operations at Naheola, Ala., have been announced by John E. Spalding, plant manager.

Floyd W. Nienow now fills the position of plant engineer. He comes to Naheola from Marathon's central plant engineering in Menasha, Wis., where he was supervisor of the pulp and paper section. He has been with the company for 10 years. As plant engineer he is responsible for all engineering, maintenance, and operation of utilities at Naheola. A graduate of the University of Wisconsin, Mr. Nienow holds a degree in chemical engineering. He was formerly plant engineer for the Ward Paper Co., Merrill, Wis.

Tom Orr, former technical services superintendent, has been assigned to the new position of production superintendent. Marathon Southern now has three machines in operation. Mr. Orr came to Naheola several years ago from Marathon's plant in Oswego, N. Y. A native of Truman, Minn., he is a graduate of the University of North Dakota where he received a degree in chemical engineering.

Replacing him as technical services superintendent is Jerome C. Marquardt who now supervises all technical service to production divisions, all laboratory activity, and process engineering. He comes to Naheola from Oswego, N. Y., where he was paper mill superintendent at Marathon's plant there. A chemical engineer, Mr. Marquardt is a graduate of the University of Wisconsin.

John W. Olfson has been named converting department superintendent, in charge of converting Naheola tissue and toweling into household and industrial products. Formerly he was converting department project engineer at Marathon's plant in Green Bay, Wis. Mr. Olfson joined the company in 1955, coming directly from the University of Wisconsin where he received a degree in mechanical engineering.

Glenn A. Arendt transferred from the company's Central Engineering department in Menasha to take over the duties of maintenance engineer in Naheola's converting department. He also is a graduate of the University of Wisconsin and holds a degree in mechanical engineering.

Keith Campbell comes to Marathon Southern from Rust Engineering Co. to take over the duties of electrical maintenance supervisor in the engineering department. Mr. Campbell, who formerly made his home in Birmingham, was engaged at Rust Co. in design engineering with emphasis on electrical installation. He attended high school in the Panama Canal Zone and later attended the University of Tennessee.

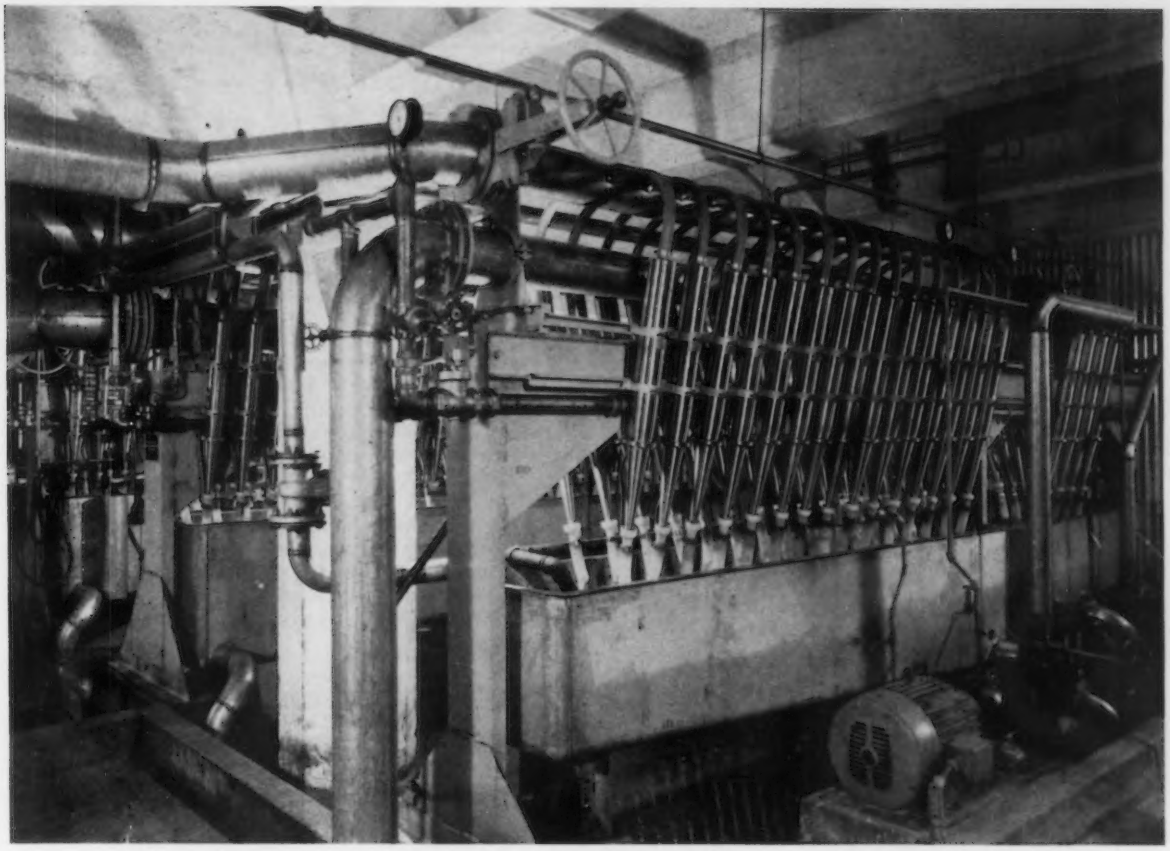
Marathon Southern Corp. is an operating unit of Marathon Division of American Can Co.

John A. Manning Paper Elects Officers

John A. Manning Paper Co., Inc., Troy, N. Y., has announced the election of Albert H. Miller as president and chief executive officer of the company. Mr. Miller takes over his new duties the first of May. He was formerly president of Lewis-Brownville Sales, Inc., which is affiliated with The J. P. Lewis Co., Beaver Falls, N. Y., and before that with Kimberly-Clark Corp., Neenah, Wis.

John A. Manning Paper Co., established in 1846, has mills in Green Island, N. Y., and Troy, N. Y., with five production machines and two development and research machines.

Other officers of the company are:



BIRD CYCLEAN *Users Report*

Unexpected and Substantial FRINGE BENEFITS

The primary purpose of every Bird Cyclean installation is to improve and maintain quality. Drastic reduction in shive count and/or dirt count are expected and achieved.

But reports of added operating improvements almost invariably follow:

- **marked reduction in breaks**
- **sharp decrease in washup time**
- **notable increase in wire life**
- **faster paper machine speed**
- **gratifying improvement in fibre hydration**
- **unexpected savings in raw material cost due to ability to use material formerly discarded**

Cycleans come in three sizes — 4" dia., 36 gpm inlet capacity; 7" dia., 120 gpm; 12" dia., 500 or 850 gpm. Ask for recommendations and estimates.

BIRD MACHINE COMPANY

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Canadian Manufacturers of Bird Machinery
CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal

A. H. Miller

Other officers of the company are: Roland Eustace, first vice president, manufacturing; Robert J. Hayes, vice president - sales; Charles E. Lanyon, vice president - research; John A. Manning, vice president - special products; Alton P. Tracy, vice president - technical director; William H. Manning, secretary; Kenneth B. Herrington, treasurer and comptroller; Mrs. Gladys G. Hayes, assistant secretary; and Oscar W. Petterson, assistant treasurer.

K. W. Max

R&D Head for Con. Can Augusta Board Mill Named

Keith W. Max will assume the newly created position of director of research and development for the Containerboard and Kraft Paper Division of Continental Can Co. Dr. Max and his staff will be located in the company's new bleached board mill at Augusta, Ga.

Prior to this appointment, Dr. Max was general manager of research and development for the firm's Robert Gair Paper Products group. He joined the pre-merger Robert Gair Co. in 1943 as assistant technical director and held several technical positions before his last appointment. He holds an M.S. and Ph.D. from The Institute of Paper Chemistry in Appleton, Wis.

PJT NEWS OF CONVERTERS

Downing Box to Erect Twin Cities Plant

The Downing Box Co. has purchased ground in Fridley, Minn., and will begin construction immediately on a Twin Cities plant.

The announcement was made by George B. Downing, president of the 43-year-old company which has headquarters in Milwaukee, Wis.

The new plant, to be located on eight acres of ground on East River Road directly north of Highway 100, will cover 120,000 square feet and be devoted to the manufacture of corrugated shipping containers. Value of the plant and equipment was placed at $2-million by Mr. Downing. Operations in the plant are expected to be started this fall.

Paul V. Barrow of Milwaukee, will be the plant manager. He joined Downing in January of this year and has 25 years of experience in the paper box industry. Sales manager will be George C. Kunz who has been sales manager of the Downing Minneapolis office for five years.

Armor-Box Corp. Formed in Buffalo

Formation of the Armor-Box Corp. in Buffalo, N. Y., to manufacture shipping containers from corrugated sheets has been announced. The company is headed by Richard W. Rupp, president, and Jonathan S. Tracy, vice president.

The company has installed its equipment and machinery in 11,000 square feet of leased space in the Riverside Industrial Center. Preliminary production runs totaling more than 40,000 boxes of various styles and design have been completed.

Armor-Box will specialize in custom-design packaging, particularly in small quantities. Mr. Rupp said Armor-Box now is the only operation of its type in Buffalo.

Mr. Rupp has been with the Gaylord Container Division, Crown Zellerbach Corp., as a packaging engineer. For the past six years he has been in charge of the Buffalo office and previously served with the company in Chicago and St. Louis.

Mr. Tracy most recently has been product manager for the Diamond National Corp. in New York. He formerly was a packaging engineer for the Dobeckmun Co., a division of Dow Chemical Co. in Cleveland.

Paper Manufacturers Opens Third Plant

Paper Manufacturers Co. has its third plant in full operation. The new facility, consisting of an office, manufacturing area, and warehouse space, is situated on a five acre site at Cherry Road and Central Avenue in the modern industrial area of Newark, Calif., near San Francisco.

The building is of the most modern construction, designed to have a straight flow of materials from receiving and shipping. It is a 20 foot high, 44,000 square foot, one-story building of tilt-up concrete slab construction. Unusually wide column spacing which insures a free flow of materials was achieved by using glue laminated redwood beams based on 65 x 45 foot centers. The concrete flooring contains a metallic floor hardener which will resist the abrasion of heavy traffic and a sealer was applied to insure dust free floors. A two-car rail siding and a four truck dock were provided for receiving and shipping. The truck docks have self-leveling dock boards which adjust to the height of the trucks tailgate while loading or unloading.

Joseph Morris is managing the Newark plant which will serve nine western States. All employees were drawn from the Newark-Freemont area except Mr. Morris who was the former manager of Paper Manufacturers' Indianapolis plant. Paul Coady who was production manager in the main plant in Philadelphia succeeded Joseph Morris as manager of Indianapolis.

A Nalco PRODUCT MANAGER Answers Questions About Process Antifoams and Foam Control

Details About a Persistent Problem In Liquid Industrial Processes

In almost every industrial process in which liquids are involved, foam becomes a problem to some extent. Though in some industries foam is only a minor irritation, in others it can seriously hamper production, increase operating costs, and lower product quality. Here are a few commonly asked questions about foam and foam control, answered by J. R. Relick, product manager of Nalco Chemical Company's Process Antifoam Department.

Question: What variables affect foam formation?

Answer: The nature of the liquid and the machinery and/or processes in which the liquid is used. The amount of foam produced is a function of both the liquid and the processes—the more agitation, the more foam. Foam stability is a function solely of the composition of the liquid. The more impurities or stabilizing agents a liquid contains, the more stable the foam is likely to be.

Question: What are the effects of foam?

Answer: In general, foam takes up space which could otherwise be productively occupied, clogs equipment, makes cleaning and maintenance difficult, obscures processes, and decreases flow capacity of piping and equipment. Each industry also has its own individual foam problems. In the paper industry, for example, foam results in poor formation, spotted sheets, and pinholes. In the latex industry, foam slows production and lowers product quality in the manufacture of monomers and in the process of stripping monomers.

Question: How can foam be controlled?

Answer: There are four basic methods:

1. Coalescence—Making little bubbles unite to form big, and therefore easy-to-break, bubbles.
2. Bubble rupture—Using an agent to puncture the bubble film, like sticking a pin in a balloon.
3. Displacement—Replacing the stabilizing agents that "fix" the bubble film with "softening" agents, making bubbles easy-to-break.
4. Film condensation – Adding agents which make bubble film brittle, thus easy-to-break.

Question: What are the characteristics of a good antifoam?

Answer: There are four:

1. It must be able to destroy bubbles in any or all of the four methods mentioned above.
2. Insolubility in the liquid in which it is used.
3. It must be highly dispersible, to spread completely through a system and to prevent overconcentration in any one area.
4. It must be chemically compatible with the system in which it is used, and must be nonreactive in chemical processes involved.

Question: What is the best foam control method?

Answer: That depends on your individual foam problems. Each set of foaming conditions requires a particular antifoam attack. The most efficient method of overall foam control is the establishment of a foam control program, using various combinations of antifoam agents and methods to meet specific sets of conditions.

Question: Is there any *one* antifoam that can solve all my foam problems?

Answer: There might well be—but it usually takes a detailed investigation to determine which one. Most modern industrial processes are so complex that adequate foam control calls for an analysis of each phase of operation by a foam control expert—such as your Nalco Representative—to determine exactly which antifoam, applied in what dosages at what points, will do the best job.

J. R. Relick, Product Manager
Nalco's Process Antifoam Department

Question: What must be considered in establishing such a program?

Answer: Surface tension of the liquid being processed, nature of the process and machinery involved, pH conditions, water hardness, temperature, and surface activity. In many industries these variables change from stage to stage of processing. Therefore, an important part of an antifoam program is the determination of which antifoam to apply at which point.

Question: What does Nalco offer in the way of foam control?

Answer: A complete line of chemicals, each designed for specific applications under specific conditions, and expert technical service to help you plan the most efficient and economical foam control program possible. Nalco chemicals—and the technical service that goes with them—are designed to meet the varied problems of varied industries quickly and economically. For information about what Nalco can do to solve *your* specific foam problems, call your local Nalco Representative. Or, write direct to J. R. Relick, Process Antifoam Department, Nalco Chemical Company, 6216 West 66th Place, Chicago 38, Illinois.

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Boise Cascade Names Johnson to Sunnyvale Post

Promotion of O. E. Johnson to general manager of the Sunnyvale, Calif., container plant of Boise Cascade Container Corp. has been announced.

Mr. Johnson will be directly responsible for the production, sales and office functions at the new Sunnyvale container plant which was opened in January of 1961. He was previously in charge of production at both the Wallula and Sunnyvale plants.

It was also announced that Alvin L. Mansigh, Kennewick, will assume complete charge of production at the Wallula container plant.

Sealright to Construct New West Coast Factory

Henry C. Estabrook, president of Sealright-Oswego Falls Corp., at the annual meeting announced that the company will soon construct another factory at its Los Angeles plant.

The new Los Angeles factory, Mr. Estabrook said, will add 50,000 square feet of manufacturing space to Sealright Pacific's present 175,000 square foot plant. Early next year has been set for completion of the new factory, he added. Construction will begin in late summer.

The new factory will manufacture, for the first time on the west coast Sealking polyethylene-coated paper cartons, "the fastest-growing part of our business," the president said. The plant will be operated by Sealright Pacific, Ltd., the firm's subsidiary serving nine far western states.

Weyerhaeuser Fills Newly Created Positions

Howard L. Simmons has been appointed to the newly created position of vice president-manager of Weyerhaeuser Co.'s Shipping Container Division.

Mr. Simmons has been serving as vice president-sales of the division's central region. He will now take charge of the four regions which have headquarters in Camden, N. J., Chicago, Ill., San Francisco, Calif., and Charlotte, N. C.

Continuing as vice president-coordinator of the shipping container division will be E. K. Radke. Both he and Mr. Simmons will report to Howard W. Morgan, vice president of the pulp, paperboard and container group, and will maintain offices in Chicago.

William A. Wurster has been appointed to the newly created position of vice president of the Shipping Container Division western region. He has been serving as assistant to Mr. Morgan with headquarters at Tacoma.

Bemis Tekmold Facilities In Muskegon Completed

A new Bemis Bros. Bag Co. plant at Muskegon, Mich., for the manufacture of Tekmold molded cellulose products, has been completed and production equipment installed.

In making the announcement, J. E. Zeller, resident manager, said the new one-story, 50,000-square foot plant, which replaces facilities at Minneapolis, Minn., should be in operation on May 1. Full production is anticipated by fall of this year.

The new structure, which will enable the company to triple its production of Tekmold products, has been almost entirely equipped with new specially-engineered machinery to substantially increase output.

Queen City Paper Elects New Officers

Mrs. Katherine M. Smith, president of the Queen City Paper Co., Cincinnati, Ohio, has been elected chairman of the board in a reorganization of the firm's executive staff. Carl J. Jurgens, formerly vice president and general manager, was named as the new president. Other officers newly elected are: Glenn F. Coleman and Howard W. Meier, vice presidents: and Delbert R. Azbill, treasurer.

Queen City Paper, with offices at 526 Broadway, manufactures round paper cans and tubes, and is a distributor of packaging papers and bookbinders supplies.

"I was a waste paper converter. I converted the wrong paper into $10 bills."

Wolf Detroit Envelope Names President

Wolf Detroit Envelope Co., Detroit, Mich., has named Louis M. Bloomberg president and treasurer. He will be in charge of all company operations including the Cadillac Lithographing Co. and dealer service divisions.

With the company 24 years and formerly vice president and general manager, Mr. Bloomberg succeeds Walter Laib, retired.

John M. Mahler was named secretary and assistant treasurer. He assumes these duties in addition to his present post of vice president and general sales manager.

Kimberly-Clark to Acquire Century Envelope

Kimberly-Clark Corp. has announced an agreement to acquire Century Envelope Co., Inc., New York City manufacturer of specialty envelopes.

Frank J. Meyer, president and principal owner of Century, will retire but continue as an active consultant to the new ownership.

Cincinnati Industries Elects Officers

At the annual organizational meeting, Cincinnati Industries, Inc., elected board members and officers.

W. Wallace Rowe was elected chairman of the board and executive committee and secretary. Mr. Rowe is one of the original founders of Cincinnati Industries, Inc., and was president for 30 years. He has been chairman of the board since 1954.

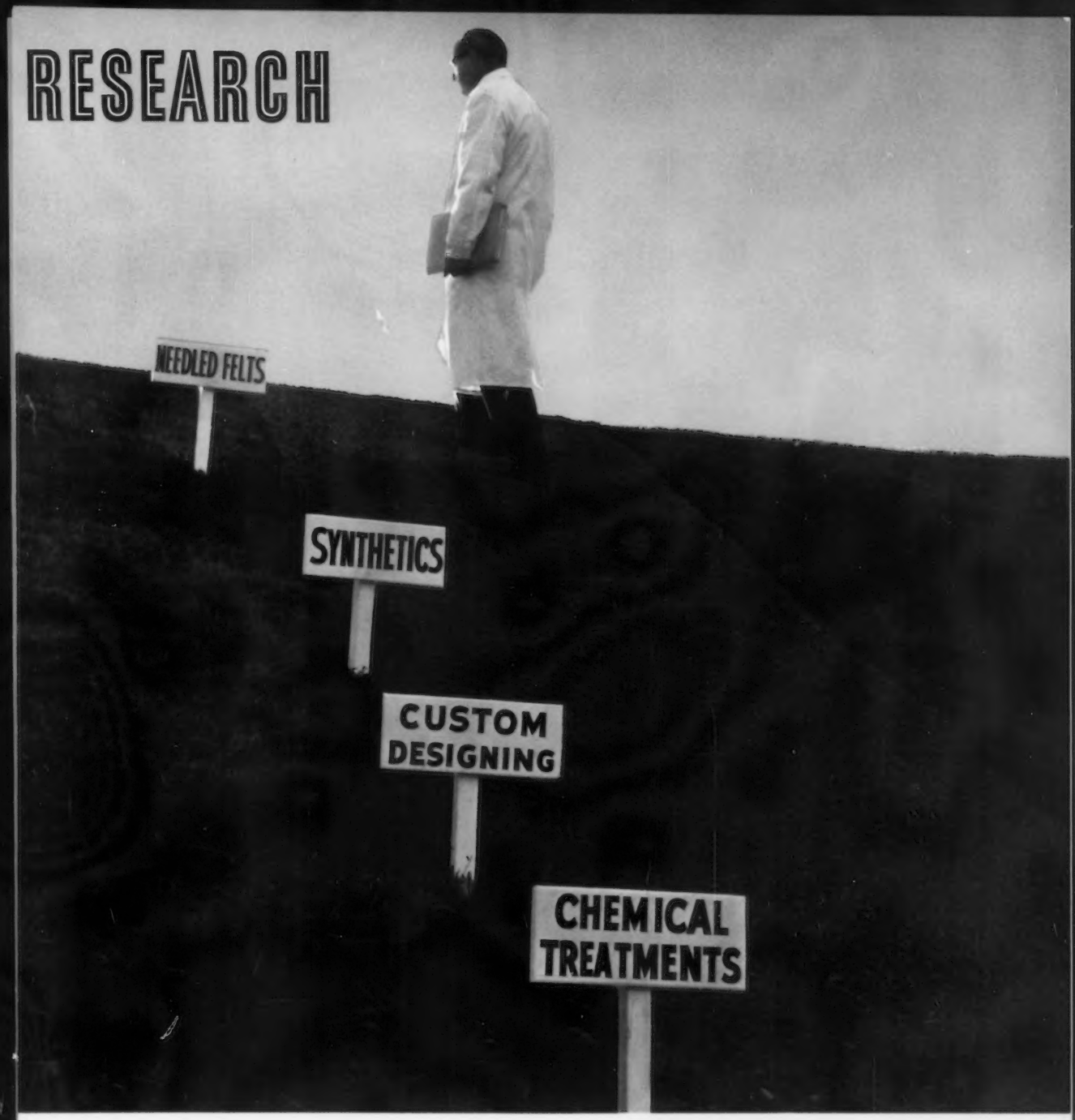
William W. Rowe, Jr., succeeds the late Ford R. Larrabee as board member, president and chief executive officer. His former position was assistant to the president.

Lewis W. Krehnbrink was named board member, vice president in charge of manufacturing, research and development, and treasurer.

Donald M. Alcoke was named assistant secretary and controller.

In addition, Victor E. Calvin was re-elected vice president in charge of sales. Other board members re-elected are: C. D. Dyer, Jr., of Cleveland, Ohio; John J. Rowe, William S. Rowe, of Fifth Third Union Trust Co., Cincinnati; and Harold W. Nichols, Fox Paper Co., Cincinnati.

The company has been in business 38 years and manufactures a high quality stretchable paper under the trade name X-CREPE.



New ideas for paper industry progress are important aims of Albany Felt Company.

Some achievements already developed are now contributing to increased production and higher quality paper and paperboard. Other new ideas under test in our laboratories promise even further advancements for the future.

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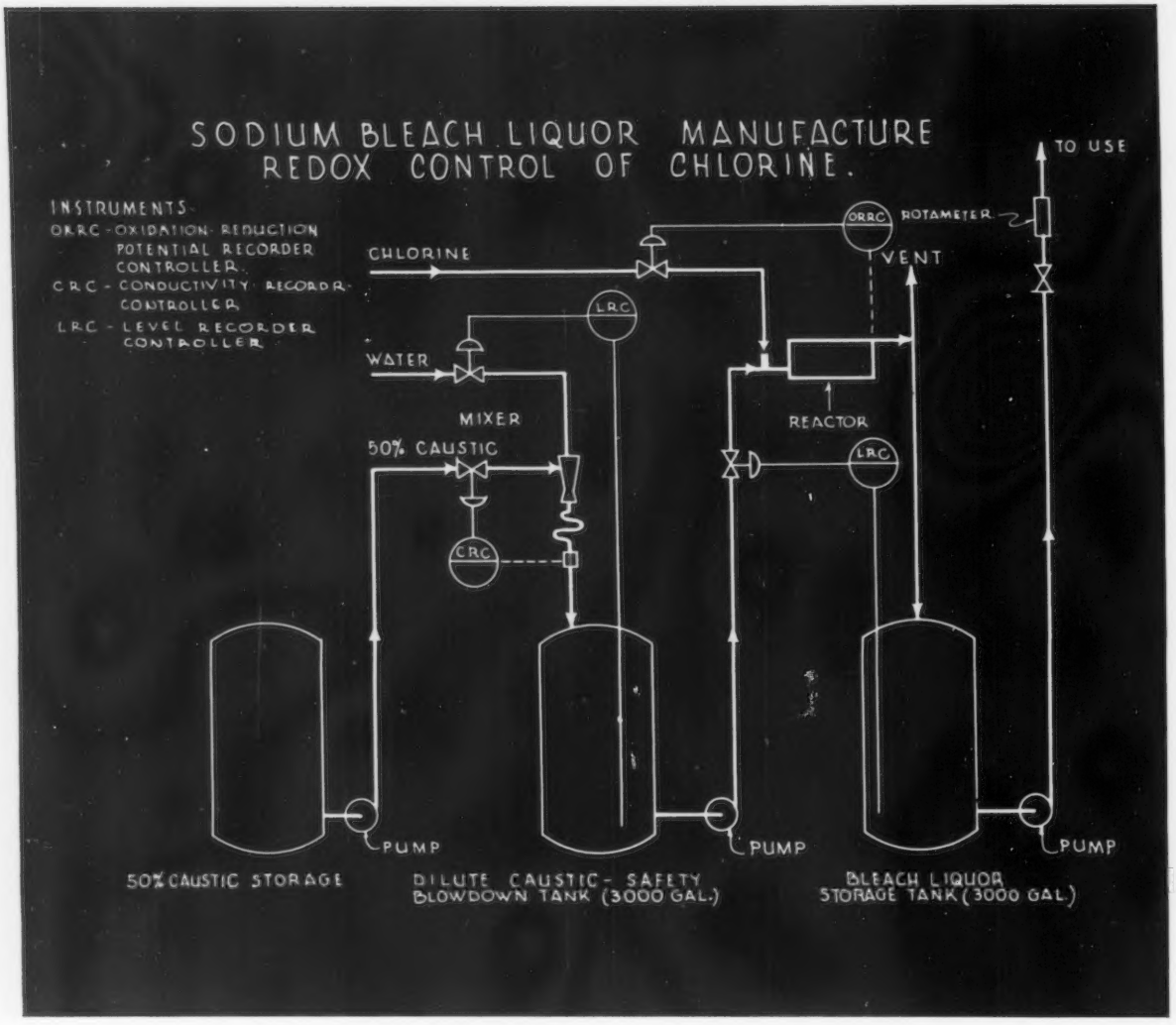

How to make bleach liquor automatically and continuously

With this simple Hooker system you can produce sodium hypochlorite* continuously and automatically. Control of bleach-liquor composition is automatic, resulting in more uniform bleach and an improved final product.

Chemical costs are at a minimum, because excessive chemical usages are eliminated. Labor costs are also at a minimum, since the plant operates automatically and requires only occasional supervision. Installation costs are lower, because large reaction and storage tanks are not needed.

How the System Operates—50% caustic soda and dilution water are metered to a caustic-dilution tank. A level-controller adjusts the flow of water to match the rate of withdrawal of bleach from the unit.

A conductivity controller meters the 50% caustic solution to maintain a constant dilute caustic concentration (3-5%).

Dilute caustic soda solution is pumped through a custom-designed Hooker reactor, of which there are several types, and combines with chlorine to form soda bleach.

The flow of dilute caustic is controlled by a level-controller in the bleach-liquor storage tank, while the chlorine addition is controlled by the oxidation-reduction recorder controller.

If you need relatively large amounts of 30-to-40-gram-per-liter available-chlorine bleach liquor on a continuous basis, this Hooker system can cut your costs by a considerable margin while giving you the top quality you want. For more information on this process, write for Bulletin No. 251, "Continuous Bleach Liquor Manufacture."

*A similar system with a modified reactor is available for calcium hypochlorite.

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NEW LITERATURE

Carbowax Polyethylene Glycols

Contains comprehensive data on Carbowax polyethylene glycols 200, 300, 400, 600 which are liquids; and 1000, 1500, 1540, 4000, and 6000 which are solids at room temperature. Carbowax methoxy polyethylene glycols 350, 550, and 750; and polyethylene glycol compound 20M are also covered. Information on physical properties, solubilities; specification limits; test methods; storage, handling, and shipping; toxicological properties; and selected literature references are included. Bulletin. Advertising Dept., Union Carbide Chemicals Co., 270 Park Ave., New York 17, N. Y.

Duty Master A-C Motors

Shows and describes the complete line of Reliance Duty Master A-C. motors from 1 to 2000 h.p. Product features of each motor are outlined and explained for easy selection of the right motor for every application. Accompanying photos and description of the motors is a detailed description of production facilities and procedures used to manufacture Duty Master motors. Bulletin B-2515. 16 pp. Reliance Electric and Engineering Co., Cleveland 17, Ohio.

Eimco-Process Reactor-Clarifier

Describes treatment unit that combines flocculation and clarification in a single tank. The principles of operation are illustrated in drawings, cut-away views and in the many pictures of operating units. Included is a series of wash drawings in full color showing flow patterns through the reaction and clarification compartments, by means of which coagulation, flocculation, recirculation and clarification are achieved. Bulletin SM-1006-R. The Eimco Corp., P. O. Box 300, Salt Lake City 10, Utah.

Four Standardized Air Conveying Systems

Using records, experience, and data processing systems, Sprout Waldron has determined that 75 to 80 per cent of today's requirements can be handled by one of four standardized systems. Bulletin explains the savings and quicker shipments possible because of this standardization; shows all standardized components, capacities, horsepower requirements and gives complete instructions on how to select and order a system. 8 pp. Bulletin 228. Sprout, Waldron & Co., Inc., Muncy, Pa.

Pumps Fine Powders Like Liquids

Gives information on Moyno pump conveying systems for in plant transfer units which cut dusting problems to a minimum. The unique helical rotor design of the pump forces the material through a stator section where a small amount of air can be bubbled into the stream to fluidize the material so it flows very much as a liquid would flow. Describes how it works, its application, and testing service available. Specification Sheet No. 229. Sprout, Waldron & Co., Inc., 130 Logan Street, Muncy, Pa.

Rockwell-Nordstrom Valves

Outlines two methods for determining flow characteristics. Section one covers the fundamental method of determining pressure drops for all types and sizes of Rockwell-Nordstrom lubricated plug valves, including the Venturi types. Section two offers a rapid method of estimating the pressure drop through Rockwell - Nordstrom Venturi type valves. Bulletin V-602. Rockwell Manufacturing Co., Nordstrom Valve Div., 390 N. Lexington Ave., Pittsburgh 8, Pa.

Reeves AIRtrol

Explains how automation is easy with AIRtrol which controls machines and processes by automatically regulating and changing drive speeds. Contains concise drawings and descriptions which show how AIRtrol can be applied to control liquid level, line pressure, process temperature, constant flow, steam pressure and motor loading. 16 page Bulletin G-2500. Reliance Electric and Engineering Co., Cleveland 17, Ohio.

Rolls for the Paper Industry

Gives information on selection and maintenance of these rolls. Suggestions on "Care and Maintenance" include valuable tips on handling and storage, calender operation and lubrication. Listed and analyzed are causes and suggested remedies for various types of roll failure — pitting, spalling, denting, scoring, etc. Bulletin 123. Farrel-Birmingham Co., Inc., Ansonia, Conn.

Survey of Manufacturing Activity in Australia

Industries covered include pulp, paper, paperboard; alkalis, chemical fertilizers, petroleum refining; wool tops, wool, cotton and man-made fibre yarns. 28-page study. New South Wales Government Office, Dept. P, 680 Fifth Ave., New York 19, N. Y.

REVOLUTIONARY • PROVEN
PREFERRED
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CANTON, MASS.

Headquarters for research and development at Buckeye was built in 1953 and recently expanded.

Buckeye Marks 40th Year in Pulp Research

One of the largest and most complete research centers in the industry successfully backs up Buckeye's belief in research for progress.

Buckeye Cellulose Corp.'s unique position, as the only producer in the industry manufacturing market pulp from both cotton linters and wood, focuses attention on the company's historic emphasis—and dependence—on research.

Extensive research has been a major factor in the rapid growth that has tripled the company's productive capacity in recent years. To keep pace, the company's research facilities have been quadrupled since 1952. Headquarters for Buckeye's research and development activities is a large, modern laboratory at the firm's Memphis, Tenn., plant. Built in 1953, it is one of the largest and most complete research centers in the pulp industry. With company growth, broadened research efforts have made necessary a 60 per cent expansion of the Center—from its original 31,000 square feet to more than 50,000 square feet. The staff now numbers more than 200 people.

Activities include both basic and applied pulp studies, as well as research on chemical derivatives and by-products. Specific research projects are directed toward:

1. Improved processes of manufacture and control;

2. Uses for by-products of the pulp-making process;

3. Finding new end-uses for pulp products.

In addition to basic and applied facilities, the Memphis Center includes a separately-housed pilot plant for cellulose products in which research findings can be applied in the production of quantities up to two tons per day. For example, before the original Foley mill was built, the Foley process developed in the laboratory was put to the test of actual production, using logs shipped to Memphis from Florida. The pilot plant is believed to be the largest of its kind in the industry. Other pilot plants in Memphis duplicate both Buckeye processes and customer end-use processes on scales ranging from 1/3,000 to 1/200 of actual size.

Fields of Research

Today's research in cellulose and cellulose chemistry at Buckeye continues work underway since 1920 in three general categories:

1. *Fundamental Research* — Over the years results have increased general knowledge in the field and led to a much better understanding of basic pulp problems. In turn, findings have led to the development of better processes and products so improved that they would be been considered impossible years ago. Examples are paper pulps with improved strength, brightness, greater uniformity and significantly greater cleanliness.

2. *Process Development Research* —Each production step is studied with particular emphasis on the effects of all variables. This information establishes the best processing methods, and provides the basis for standardized procedures in plant operation and the closest possible control of product quality.

3. *Customer Research*—Since pulp is an intermediate in the manufacture of many products, it must perform correctly in the varying processes used by the firm's numerous customers in the different fields. For this reason, Buckeye maintains extensive equipment in order to study problems involved in pulp-end-use. Numerous pieces of specialized testing equipment are in constant use on comparative studies.

In addition to the facilities at Memphis, studies on special projects are supplemented by work at the basic research center of the parent company, Procter & Gamble. Buckeye also sponsors research and development studies at independent laboratories such as the Institute of Paper Chemistry, Cellulose Research Insti-

tute and leading universities.

Currently, for example, the company is sponsoring a unique research project at the University of Uppsala in Sweden. Aspects of the three-year project include the study of pulp molecular properties in certain solutions, and the relation of molecular sizes and shapes to types of pulp and methods of processing.

Develop More Precise, Timesaving Methods

Meanwhile, the company's researchers find themselves frequently before technical meetings to report a continuing flow of significant results from their laboratories.

At an American Chemical Society national meeting, for example, a method was made public which permits a complete characterization of pulp structure in two days instead of the two weeks formerly required. Considered a significant advance in industry efforts to tailor pulps more precisely to specific end-uses, the new method came as a result of years of X-ray diffraction research by Buckeye.

On the commercial front, researchers also scored a significant advance by developing Lintabond, a new, improved cotton linters pulp for use in making cotton content paper—a development pushed by Buckeye to help solve paper manufacturers' problems caused by the shortage of acceptable rags.

Otto H. Alderks, vice president for research and development.

Greater Research Results Ahead

For the future, company officials are very optimistic for further progress through research. "Cellulose is a constantly replaceable low-cost fiber product. Its extraordinary strength is combined in a unique way with resiliency and absorbency," comments Buckeye Vice President O. H. Alderks. "Extensive research will produce many diversified cellulose products essential for the continued improvement of man's standard of living."

Unique Pilot Plant

A pilot plant believed to be the largest and most versatile facility of its type in the world provides Buckeye researchers with a unique and immensely useful research tool. Nestled in the center of the company's cotton linters plant, but separately housed, the pilot plant can process both cotton linters and wood and is capable of producing up to two tons of pulp per day.

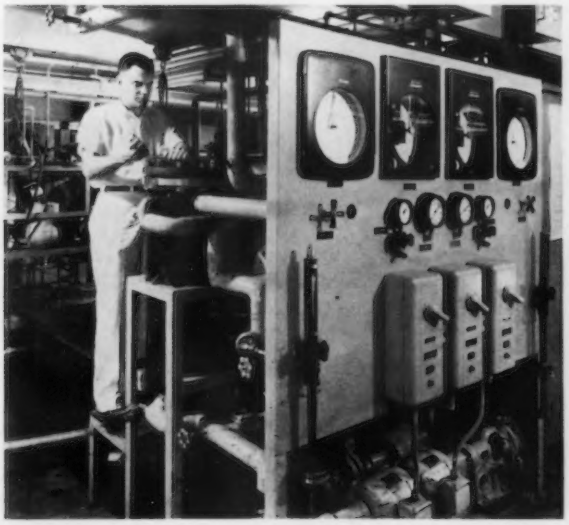
The equipment and control mechanisms in the pilot plant permit researchers to duplicate the process conditions found in both the Memphis cotton linters plant and the Foley wood pulp plant. Also several variations of each process can be staged for experimental purposes.

The pilot plant is connected through an elaborate piping system with the main plant, so that stock from any stage of production may be transferred to the pilot plant for experimental work. "This inter-connection," says Dr. T. A. Feazel, who is in charge of the pilot plant operation, "increases our confidence that pulp samples produced in the pilot plant are representative of what can be made in the linters plant."

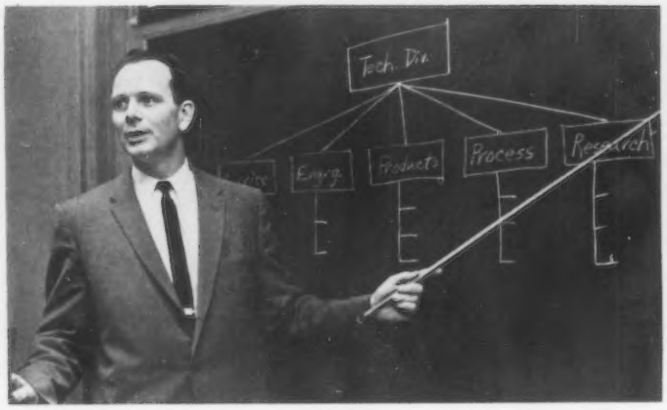
Alongside the pilot plant building is a concrete-lined pond in which peeled logs from the Foley mill are stored. Underwater storage prevents the logs from drying and deteriorating; and they are fed, as needed, into the pilot plant chipper. Freshly chipped wood is used in order to keep condition and moisture content of pilot plant chips similar to those of chips used at Foley on production runs. Both batch and continuous bleaching are done in the pilot plant.

In pilot plant, pulps from both cotton linters and wood may be produced in quantities up to two tons per day.

Technician bolts head on one of six digesters in pulp process development laboratory.



Fred E. Pollock, associate director-products, reviews Buckeye's concept of its role in the total research effort of the paper industry.



Karl A. Jurbergs, research chemist, makes use of lab's electron microscope.

For wood pulp processing, there are 9 miniature bleach towers. During the construction of Buckeye's original installation at Foley, those towers ran continuously for ten months producing fully bleached pulp samples.

For the study of refining on fiber characteristics, the pilot plant contains four different types of jordans. The pilot plant also contains a 39-inch fourdrinier type pulp drying machine which was originally a production machine. It has been reworked for use in pilot plant operation. The unit will dry up to 1000 lbs. of pulp per hour.

Wide Range of Research Projects Spell Progress for P&P Industry

At a conference held in connection with the 40th anniversary of the firm's pulp research program several of the current research projects underway were revealed.

Interim results of long-range Buckeye research on raw material variations have yielded important data for process development work on the physical and chemical modification of fiber properties, according to Karsten A. Zachariasen, head of one of the process sections. The objective was to study the effect on pulp properties of variations in wood density within the same tree and between different trees.

The importance of the study and future research, Mr. Zachariasen said, is due to the fact that a single pulp type seldom gives the proper balance in the spectrum of properties required for the final product.

Higher yields from woodlands were predicted by Walter L. Beers, research forester, who reported on Buckeye experiments that have achieved dramatic increases in volume of wood produced. In broad terms, he explained, the program is designed to bring new woodlands into production, sustain production in the face of natural hazards and devise means to increase productivity.

New knowledge concerning the effect of refining on papermaking fibers revealed by research at Buckeye may pave the way for papers with improved strength-related properties, according to Wendell L. Thornburg. In his project Dr. Thornburg said he had attempted to isolate refining variables for detailed study. He said he had been able to identify several types of fiber modifications accomplished by refining. From the fiber modifications identified, three were selected for detailed study. These were fiber shortening, hydration, fibrillation. Contrary to common belief, he said, hydration and fibrillation can be readily identified as two separate types of modification.

A three-point program of quality control, with emphasis on written standards and continuous control of each step of the process, has resulted in improved product uniformity and quality according to Thomas S. Harris, associate director of the company's Technical Division.

The first element of the program, he said, is the attempt to exercise precise control over every processing step. The second element is the maintenance of detailed written process instructions, written log sheets to record performance, and routine auditing of the operation to check conformance to instructions.

The third element of the program, Mr. Harris noted, is the continuous effort to instill in all employees, and particularly production supervisors, a real belief in the importance of quality control.

Emphasis on product testing and a creative effort to develop new techniques have resulted in improved product quality, better process control and improved customer service, according to Kenneth A. Kuiken. According to Dr. Kuiken, a unique system of reference sample analyses has been devised to monitor the company's extensive testing program. By interspersing routine test samples with samples of known characteristics on each plant shift, management can quickly detect faulty laboratory procedures and malfunctioning instruments. Through use of this internal auditing, the shipment of accurately tested products is assured.

New knowledge with applications leading to more precise control of pulp quality has been gained through continued studies in fiber microscopy, according to Karl A. Jurbergs. Among the practical results described by Mr. Jurbergs is the production-line use of photomicrographs of dirts and impurities as an aid to maintaining pulp purity. With about 20 photomicrographs in catalog form handy for quick identification of foreign particles in pulps, production personnel are able to locate and eliminate potential sources of impurities more rapidly, thus facilitating the control of finished product quality.

New Sorg Press Section Met Stiff Requirements

When Sorg Paper Co., Middletown, Ohio, started up the world's first multiple Rotoformer installation (PAPER TRADE JOURNAL, March 6, 1961), it and the press section built by Patton Manufacturing Co. operated without a hitch. Although the press section on Sorg's No. 2 machine does not look unusual except for the clean design, it met a set of requirements that challenged Patton's engineers.

"We realized that this was a pioneer effort," said George S. Herbert, president of Patton. "We made sure that the press section embodied a maximum amount of flexibility. It had to be adaptable for almost anything, even to the remote possibility of conversion to a conventional machine."

The installation is the second complete press section built by Patton, although the firm has designed and built many individual presses of various types.

Space Critical

Wayne Crannell, general manager of Patton's Paper Mill Division, summarized the five requirements:

1. The press section had to handle the output of one, two, or all three Rotoformers without definite knowledge of what was going to happen or whether or not the sheet would support itself in an open draw from the last Rotoformer to the first bottom felt. Results since start-up have shown that drop-off is not a problem.

2. Space requirements were critical. The narrow aisle between No. 2 machine and No. 1 had to be maintained at maximum width to allow wire changing on No. 1 machine. For this reason the felt framework over the Rotoformers spans the entire 30 foot-distance from the press section back to the tail section, without intermediate support.

3. Since nobody knows precisely what grades the machine will be producing several years from now, the felt runs and threading arrangements were designed so that presses can be by-passed in various ways.

4. To anticipate possible speed-up requirements, space was provided for the addition of four new 48 inch dryers.

5. The press section had to be compatible with an existing drive which Patton installed about five years ago.

Mr. Crannell said, "Nobody can guess the importance of this machine. While the fact that it is a 'first' makes it historical, I believe its big contribution will be in the kinds of stock it may make possible. The fact that it worked smoothly from the beginning is a tribute to the faith and skill of a lot of people."

"It is important to remember that this is a production machine and not an experiment," said Mr. Crannell.

Suction Leg Unusual

The new Patton press section includes a suction primary press, a main press, a plain reverse press, and a smoothing press and the overhead framework. Also included is a new tail section.

A common bottom felt carries the sheet through the suction primary press and through the main press. The top felt run is arranged in such a way that the pick up felt can be carried through the suction primary and back to the Rotoformers.

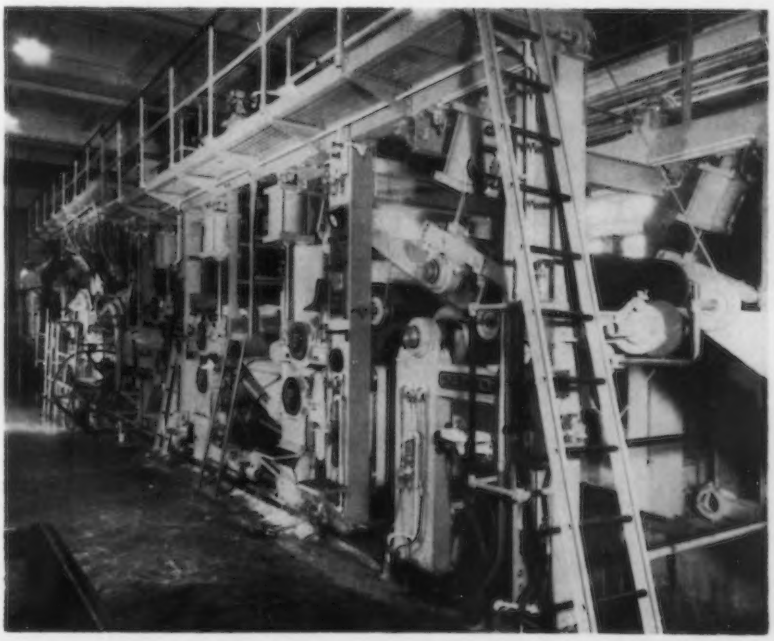
An unusual feature of the suction press is that the suction leg is built directly into the press framework, and the vacuum piping to the Nash vacuum pump is flanged to the inside of the framework so that it does not project into the aisle.

In contrast to the use of a whipper on the bottom felt of some cylinder machines, the felt passes over a Mount Hope roll, under a conventional felt roll, and then over a Bird-Vickery felt conditioner prior to returning to the suction primary nip.

Doctors are used on the main and reverse presses, but the top roll of the suction primary press has a "self-peeler" cover instead. Rubber roll covers are by Raybestos-Manhattan, Stowe-Woodward, and Cincinnati Rubber Co. Roll removal equipment is built into the press framework.

Wet press rolls are equipped with spherical roller bearings, as are all of the felt rolls. Felt stretchers are air-motor operated. Gilbert & Nash automatic felt guides are used. The rope carrier system extends from the reverse press through the smoothing press to the first dryer.

Through Sorg's mill modernization program, No. 2 machine has undergone a step-by-step improvement until now all but the dryers and calenders have been replaced in the past five years.



View of new wet end of Sorg's Number 2 machine shows location of press section and three Rotoformers.

What You Should Know About The Care and Use of Magazine Grinders

Here is an extensive and practical manual especially concerned with the interaction of operation and maintenance of magazine and Great Northern grinders. It contains complete discussions on its various components, including the mounting of pulpstones.

F. D. Hartley,
Assistant Manager,
Pulp & Paper Division,
Koehring-Waterous, Ltd.

The Waterous-Great Northern grinder (in the United States, known as the Great Northern-Waterous grinder which is built by the Montague Machine Co.) is made in two sizes; namely for wood 48-51 inches long, and for wood 60-64 inches long. For best operation on the shorter wood, it is recommended that all sticks over 16 inches diameter be split.

For the longer size, split all wood over 18 inches diameter. Wood is brought to the grinders by a recirculating water trough or by a conveyor which is centrally located between two sets of grinders. The magazine, when filled to the loading point, is two-thirds of the capacity of the pocket in the grinder. This arrangement allows room for the gate on the grinder to close without any obstructions from the logs, even if they do not drop quite evenly. The magazine should not be fiilled above the loading point, and it should be loaded as evenly as possible. There is installed an automatic door on the magazine on the stone's up running side. Splashing of the stock up through the magazine when taking on a new charge is thus prevented.

The Super Magazine grinder, designed for operation on 48-51 inch long wood, requires a two-floor building. Wood is fed from the upper floor, and it is customary to keep the magazines filled with wood to the level of the charging floor. For best operation, split wood in large quantities should not be fed to this type of grinder.

Both grinder designs are equipped with ventilating ducts for exhausting the vapors generated in grinding. Both grinders are also furnished with what is known as the T-type control stand—one control stand for each cylinder. The bearings can be either babbitt sleeve type or antifriction type.

These grinders are usually driven with synchronous motors. On 60 cycle current, the most popular speed is 257 r.p.m. and on 50 cycles it is 250 r.p.m. Grinders are usually installed in pairs; that is, two grinders driven by one motor.

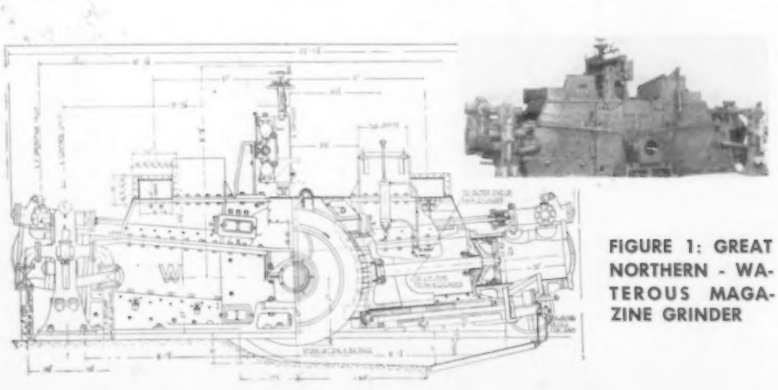


FIGURE 1: GREAT NORTHERN - WATEROUS MAGAZINE GRINDER

The main cylinders are operated by a two-pressure water system. The pump for the grinding operation is sized to develop pressure of 375 p.s.i. at a capacity to suit the number of grinders installed. Low or reversing pressure is 130 p.s.i. Grinding pressure is controlled through the governor so as to maintain a constant load on the motor.

As the maintenance and operation of both designs of grinders are somewhat similar, these phases are considered the same in the ensuing discussion.

Height of Dam

The machine is provided with a gauge for setting the dam. Before this gauge was supplied most operators carried the dam too high, which interfered with the operation of the pocket on the up-running side of the stone. From time to time the diameter of the stone should be measured when the machines are shut down. This can be done by measuring from the outside diameter of the flange to the edge of the stone. Since the diameter of the flange is known the diameter of the stone can easily be obtained. The marks on the gauge—67, 66½, 66 etc.—indicate the diameter of the stone, and when the gauge is set for this diameter all that is necessary is to bring the dam up until it touches the gauge. After this is done the gauge can be slid up into its socket out of the way of the operator.

Stock Consistency

The consistency of the stock should be run rather low for best operation.

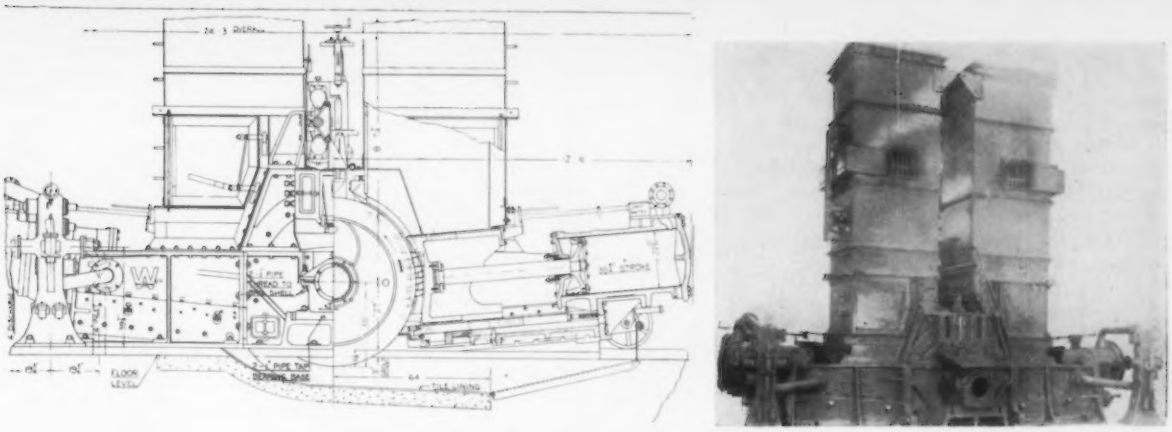
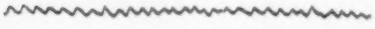


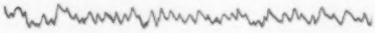
FIGURE 2: SUPER MAGAZINE GRINDER

Two to 2½ per cent is high enough, as the machine clears itself much better than when the stock is run at a high consistency.

The temperature of the white water, of course, has considerable to do with the consistency. It is desirable to use warm white water so that the low consistency can be carried in the machine and the stock kept at the desired temperature, which is usually in the neighborhood of 175°F. If the stock is run at a high consistency, in all probability the temperature control will not work properly. As the stock piles up around the temperature bulb, the operator may think he is getting a good temperature record, due to the fact that the temperature changes are not recorded quickly. If the dam is kept too high and the stock carries a high consistency, the temperature chart will read like this:



If the temperature control is working properly it should give a chart graph like this:



It is also a part of good operation to have the stock flowing across the entire width of the pit. This it will do much better if it is at a lower consistency. A higher consistency stock has a tendency to cling to the side walls, which means that the edge of the stone will be running at a higher temperature than at its center. If a wooden dam is used, be sure that the lip board is not sagging in the center, which would cause the stock to run to the center of the pit. It is preferable to have the sides of the dam slightly lower than the center. Do not minimize the importance of having the stock flowing properly over the dam; check the dam with a straight edge from time to time.

Shower Pipe Arrangement

Top Shower. This is a constant volume shower, and should have shower holes of sufficient size and number so that a full valve opening can be used. About 35 to 40 per cent of the total dilution water should be introduced at this shower. If the holes are too large and the full valve opening not used, then one side of the stone will not get its proper share of shower water, which will create an uneven temperature condition on the stone. With average white water pressure—say 40 to 50 pounds—a two-inch shower pipe with fourteen 5/16-inch holes seems to give good results. When using a shower with holes of this size, it is necessary to have a shower pipe with a cleaner, otherwise the white water will tend to plug some of the openings. Figure 3 shows how it should and should not be operated.

Temperature Control Shower. This shower enters the machine at the back or at the end opposite to the discharge or dam end. The purpose of this shower is to keep the temperature of the stock in the pit constant. There is a temperature recorder with a 2½-inch valve and thermometer bulb. When one pressure foot goes off to receive another charge, the grinding temperature naturally drops. Immediately as this takes place the shower water is reduced so that the temperature of the stock remains constant. This serves two purposes: first, a constant temperature is best for successful stone operation; second, it keeps the consistency of the stock practically the same. This shower is not directed against the stone but into the pit at the downrunning side. About 60 to 65 per cent of the shower water introduced into the machine is supplied through the temperature control.

Stone Sharpening

This is a subject on which there is considerable difference of opinion and practice. It is difficult to set down any hard and fast rule, as wood conditions, speed of paper machine, temperature requirements, etc., all play their part.

It may well be that some of the

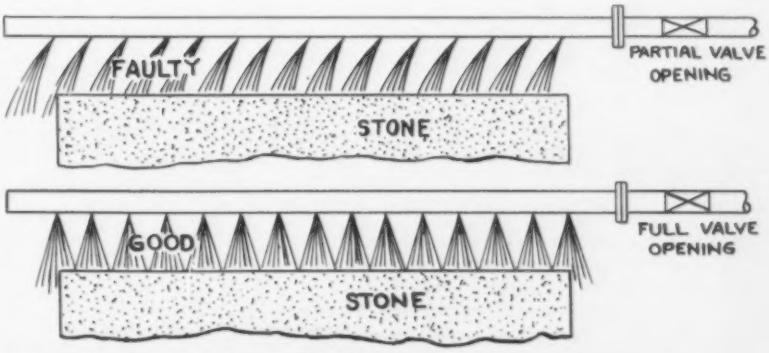


FIGURE 3: OPERATION OF TOP SHOWER

differences are a carryover from the days of the natural stone, when hardly two stones were alike, which meant there was nothing basic. However, today it is different, as stones of a given grit are practically all uniform in hardness so that stated times for sharpening can more easily be followed. In line with this, these machines are fitted with a new heavy type sharpening lathe with a micrometer dial for the setting of the depth of cut. The later machines are all fitted with a stop on the dial. Machines not containing a stop, can easily be fitted with one. A means is provided for taking up all wear on the slides of this lathe. The sliding cars on which the carriage runs are covered in with a housing which is lined with felt, which should be well oiled at the installation. This keeps all pulp from accumulating on the sliding bars, and keeps them lubricated so that a very close setting can be maintained.

When using this lathe a uniform system of sharpening must of necessity be followed. Some of the points to be considered are:

1. Use a burr of coarse enough cut so as not to upset the grit of the stone and spoil the quality of the pulp after sharpening. Probably an 8 or 10-cut burr will be found satisfactory. This will keep the face of the stone open without spoiling the grinding surface.

2. A uniform schedule for sharpening should be followed. If, say the usual time is three days, make this 72 hours and sharpen at this time.

3. Do not use a worn burr pin. If an anti-friction burr center is used, avoid looseness at this point.

4. Do not move the burrs around from one machine to another. Have a burr for each machine.

5. When ready to sharpen, shut off the pressure so that the machine is not grinding and the shaft is down in the bottom of the bearings. This is important as the shaft is floating when grinding. Be sure there are no slivers or slabs in the path of the burr. Clean the stone with the top shower and leave a moderate shower on when burring.

6. A predetermined depth is used for sharpening. With some operators this runs .004 or .005 inch, allowance being made for wear of the burr after each sharpening. This will be determined after use. To determine this allowance the burr should be measured with a micrometer before and after sharpening. This will give data that can be used as standard. After each sharpening set the depth for the next cut, so that all that is necessary is to bring the finger against the stop.

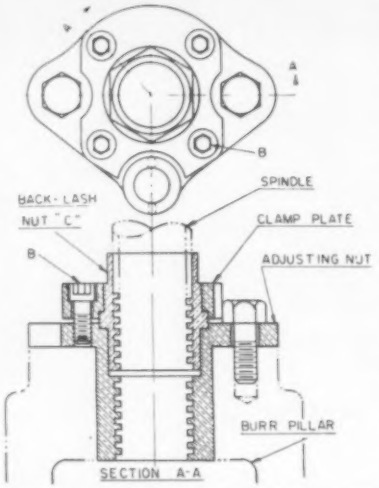


FIGURE 4: BACK-LASH NUT ON BURRING UNIT

It would also be advisable to check new burrs to see if they are uniform in diameter. If not, it would be well to pick out burrs of the same diameter for a given machine, and when ordering burrs, to stipulate them to be of uniform diameter.

7. The use of the micrometer adjustment for the burr post requires that all looseness resulting from wear or other causes between the adjusting screw and the burr post be removed. Provision is made for this in the use of a back-lash nut as shown in Figure 4.

8. A predetermined constant speed should be used for running the burr across the stone. The valve is provided with limit screws so that the valve lever throw can be set, giving the same valve opening each time and a practically constant speed.

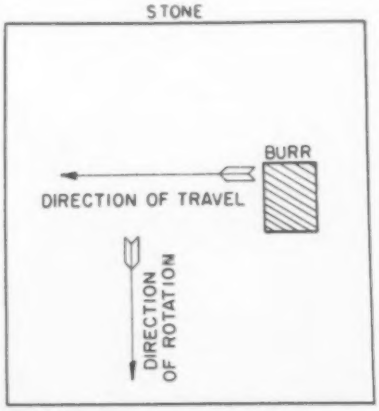


FIGURE 5: WHAT DIRECTION TO BURR STONE

9. As burrs are usually cut with a right-hand thread, a more uniform sharpening will be obtained by burring from right to left when the stone is revolving toward the operator, or similar to running a right-hand nut on a thread. It is not advisable to run the opposite way, or in both directions on the same stone. Figure 5 illustrates this concept.

If the burr is run in the opposite direction to that shown, the thread on the burr, instead of leading into the cut, will be lagging and not giving a clean cut. In fact, it would be similar to trying to put a right hand nut on a left hand thread, and if the pitch of the burr were increased until it were a spiral burr, it could not be run, except from the one direction. This is mentioned only to prove the point that it is always advisable to run the burr in the right direction.

10. Be sure to clamp the burr post before starting the travel of the burr across the stone.

The Main Cylinders

The direction of travel of these two cylinders is governed by the electrically-controlled, hydraulically-operated valves on the control units. The control units are described elsewhere.

The relationship of travel between the two cylinders is controlled by mechanically operated valves built into the assembly of these two cylinders. This arrangement and their operation is as shown in Figure 6.

The complete reversing stroke and part of the forward stroke is performed by the low pressure water system centrally located in the grinder room. Governed high pressure water is used only for that portion of the forward stroke during which grinding actually takes place. Both cylinders are designed for a high pressure of 375 p.s.i. as are the outer cylinder covers, the pistons (1) and (4), the 3-inch gate operating valve (6) and the piping to this valve from the control unit. The remainder of this system is designed for 135 p.s.i.

The main cylinder wall has specially shaped ports (8) which gradually reduce the discharge flow from in front of the piston (1) as it approaches the end of its stroke.

The gate cylinder has a cushion device built into each cylinder head. This is of the ball check valve type to provide positive cushioning and rapid start. The water being discharged by the forward movement of the piston (4) passes through port (9). The tapered spigot of piston (4) upon reaching the end of the

stroke passes through ring (10) gradually trapping the water in front of the piston and slowing its movement. Rapid start of the return stroke is accompanied by lifting stainless steel ball (11) from stainless steel seat (12) to permit full force of the water to act on the complete face of piston (4).

Wearing Plates and Cylinders

Both designs of grinders have heavy pressure feet carried on renewable wearing plates. These pressure feet are guided in the main frames of the grinders. Both the main frames and the pressure feet are fitted with renewable wearing plates. It is a good policy to check these wearing plates periodically, and if excessive wear is shown that cannot be rectified by shimming, the wearing plates should be replaced. Typical clearances between the pressure shoe and the lower side frames are shown in Figure 7.

Excessive leaking at pistons and piston packings decreases the efficiency of the grinder operation. These points should be checked at least every six months. Main cylinders have either bronze or stainless steel linings and if, upon checking the diameter, it is found these are badly scored or worn .025 inch to .030 inch out of round, we recommend replacement of the liner. Upon replacement of the cylinder liner the shoe on the piston should be replaced. If by babbitting, babbitt over size and turn to a diameter .015 inch smaller than the smallest diameter of the cylinder bore. The gate cylinder used with the Great Northern grinder should also be checked for wear. If found to be badly scored or out of round .025 inch, .030 inch, the liner should be replaced.

Main piston (1) travels back when control unit valves are reversed. Cam (2) on the pressure shoe engages roller on the operating arm of 2" valve (3) as piston nears 7/8 its stroke. This diverts water to the gate operating cylinder. Piston (4) then travels back, operating the gate and the magazine. The gate releases pull rod (5) to operate 3" valve (6). Spring (7) closes this valve. Valve will lift against pressure spring to permit water to discharge from reversing stroke of piston (1). Pistons (1) and (4) reach end of their strokes at nearly same time. Pressure shoe actuates a limit swith (not shown) to reverse water flow from control unit.

Flow from control unit now enters and closes valve (6). Piston (4) moves forward with its discharge water passing through open valve (3). Valve (6) is opened by pull rod (5) when gate reaches closed position. Water is diverted to piston (1 advancing pressure shoe into grinding position. At end of grinding stroke, a limit switch is tripped and control unit reverses water flow to cylinders to repeat the cycle.

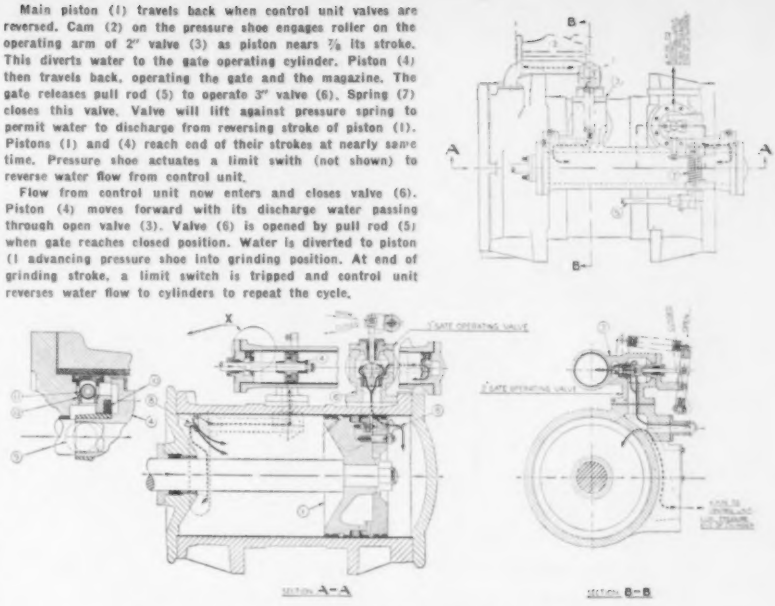


FIGURE 6: OPERATION OF MAIN AND GATE CYLINDERS

WATTMETER GOVERNOR

The standard wattmeter governor consists of a sheet steel cubicle on which is mounted the main valve, two magnetic pilot valves to control the movement of the main valve, a pressure limiter, and the governing wattmeter itself. These parts can be easily identified in Figure 8. An indicating or graphic wattmeter of any make can be flush mounted in the panel.

The Waterous wattmeter is of the Kelvin balance type mounted on a Bakelite board. The voltage element is carried by a coil spring giving a practically frictionless suspension devoid of all pivots and jewels. This moving element carries a contact swinging between two stationary contacts, which are usually set for approximately 1/32 inch total gap.

The stationary contacts are carried by the posts on which the stationary coils are mounted, and from the ends of these posts are carried leads to pilot valves mounted one on each side of the panel.

These contacts close the circuits to the pilot valves, lifting the movable core and a monel metal ball from its seat and permit a flow of water into or out of the bottom of the cylinder of the main valve. The current required to operate these valves should be supplied from a separate 110 v. or 220 v. circuit. One-tenth ampere is required at 110 volts.

The action of the governor is as follows:

If the load increases beyond that for which the governor is set, the moving contact swings and strikes the stationary contact on the left hand side. This energizes the right hand or decreasing pilot valve. The grinding pressure forces the piston down by ejecting the water out through this valve closing the main valve and reducing the pressure and load. Visual evidence of this action

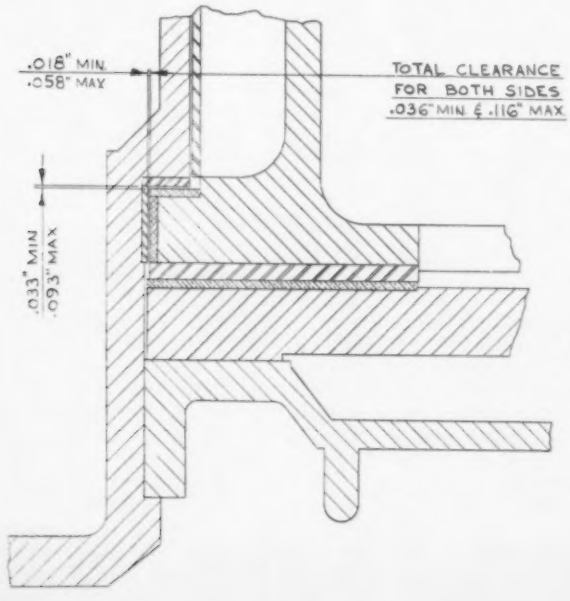


FIGURE 7: CYLINDER WEARING PLATE CLEARANCE

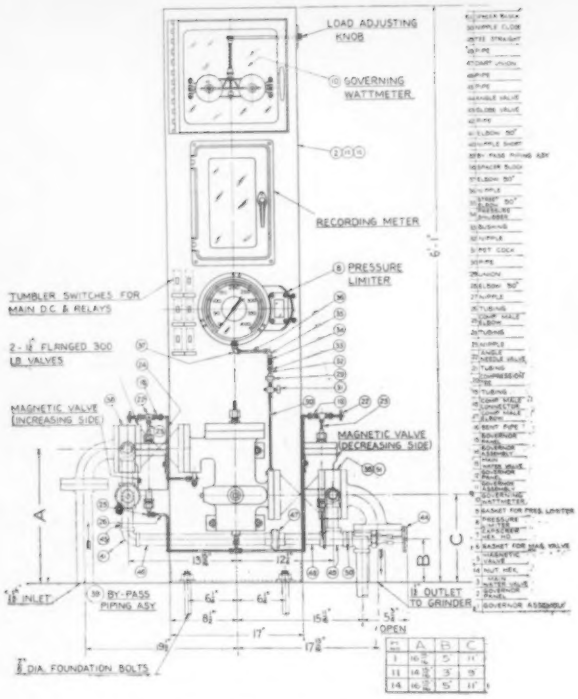


FIGURE 8: WATTMETER ASSEMBLY

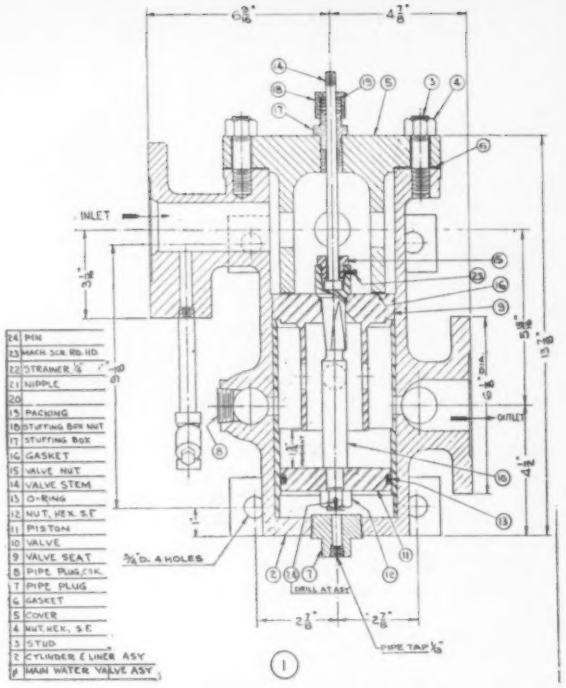


FIGURE 9: MAIN WATER VALVE ASSEMBLY

is seen in the flow of water from the bottom of the pilot valve.

Main Water Valve

The main water valve is very simple and trouble free, and consists of only five parts as shown in Figure 9: cylinder, cylinder head, piston, valve seat and valve stem. The cylinder is equipped with a honed stainless steel liner and a stainless steel piston.

The "O" ring-equipped piston moves up and down in the cylinder with very little friction. The water which moves this piston is supplied from the inlet side of the main governor valve through a filter to insure a clean supply to avoid cutting and undue wear of the moving parts.

There is a circular cored space around the cylinder with four holes leading therefrom through the cylinder wall. These various passages provide space for unrestricted water flow to the main valve outlet and in such a way as to avoid any side thrust on the piston. It will be noted that grinder pressure is always above the piston, and this supplies the closing force. The piston size has been selected not only to give ample area for plenty of power but also with the view to having considerable displacement so that the magnetic pilot valve seats can have large orifices which do not plug up readily.

Control water is taken from the inlet through the strainer to the increasing magnetic valve and through it to the control connection in the cylinder bottom. The control connection in the cylinder bottom also leads to the decreasing magnetic valve, which when open allows water to be ejected through it from below the main piston to the atmosphere; the grinder pressure above the piston being the actuating force. It is thus apparent that the closing force is very positive and increases with a rise in grinder pressure.

Pressure Limiter

This is a device to limit the maximum pressure that a governor may let through to the grinders. For instance, consider the case of two hydraulic magazine grinders driven by one motor. Suppose the normal grinding pressure is 200 p.s.i. to maintain a load of 3500 k. w. on the motor and that 400 p.s.i. is available at the inlet of the governor; in such a case, if for any reason one or more pockets stopped grinding the load might drop to say 2,000 k. w., and the wattmeter on the governor would signal for more load, and cause the main water valve to open wide, and place perhaps the entire 400 lbs. on the stones, which would be undesirable, from quality of stock standpoint, and in some cases over-pressure might cause breakage of parts. Here is where the limiter comes into action because in case it had been set for a maximum of 300 lbs. that is all that could get through to the stones.

The limiter is built around an 8-inch heavy brass gauge. Electrical contacts are attached and enclosed in a heavy brass housing. This housing has a window which shows the position of the contacts at all times. Two knurled nuts on the right of the housing provide means of adjustment. The limiter can be set regardless of the pressure on the system by proceeding as follows:

Loosen the top nut and pull downward until the needle registers the correct maximum pressure desired, then loosen and move upward the bottom nut till contact is made between the center moving arm and the lower arm. Clamp the lower nut in this position and move the top arm to its limit upwards, and clamp there out of the way. This setting will be approximate, and it is well to make it 5-10 p.s.i. low as the actual contact point under pressure will be higher. The top arm is used only for the above operation of setting the limiter.

When the limiter makes contact due to over-pressure, the decreasing pilot valve is opened to start closure of the main valve. In other words, the contacts on the limiter are in

parallel with the decreasing contacts on the wattmeter.

To remove the glass front on the gauge loosen three screws on the retaining ring. In case the limiter has to be detached for repairs, it is first necessary to remove the wires which are accessible from the rear. If these wires are taped up, the governor can be continued in use without the limiter temporarily.

Magnetic Pilot Valve

There are only three moving parts subject to wear, the plunger, a 5/16 inch stainless steel ball and a hard bronze separator. The case is cast iron and all parts in contact with water are of brass or stainless steel. The coil is immersed in transformer oil and moisture effectively excluded. The moving parts are all lowered from the valve for inspection by unfastening the pipe from the bottom of the valve and unscrewing the valve seat. These valves are made to work under high pressure and will withstand the hard usage they get for long periods. The magnetic pilot valve assembly is illustrated in Figure 10.

The parts subject to wear on the magnetic valves are the plungers and seats. The jaws on the plunger wear, and the ball pounds a hole into the face of the seat. Plunger life can be extended by squeezing the slots together in a vise until the ball protrudes about 1/32-inch. The fit with the valve seat should be tested. The 5/16-inch ball should be placed in the plunger, and a rod about ¼-inch dia., 4 inches long inserted in the hole. Hold the seat in the left hand, and the plunger in the right hand with the index finger on top of the rod. Hold the ball against the seat, and lift the plunger only off the seat. For good seating there should be a gap of about 1/64-inch between the plunger and the seat.

Worn seats can be reconditioned by turning the face with 5° taper. The dimension from face to sealing shoulder must be maintained. After machining, the burrs at the orifice should be removed. A 5/16-inch ball is then placed on the orifice, and given a sharp light blow with a hammer. Sufficient ball impression should be made for proper ball seating.

The valve seat seal to the center bronze tube is metal to metal. No gasket material is required. Light wrench pressure will provide a good seal. The sealing seat must be free of foreign material or burrs before inserting the seat in the tube.

To be concluded in next week's issue.

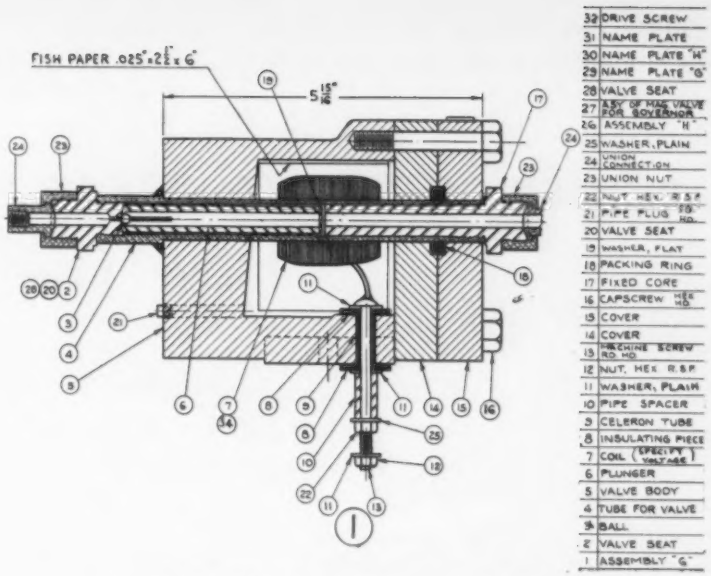


FIGURE 10: MAGNETIC VALVE ASSEMBLY

South Shows Gains in Use of Wood Residues, Hardwoods

Data released by the U.S.D.A. show that for 1959 pulpwood consumption in twelve Southern states increased 2,517,000 cords over 1958 figures. Notably, sixty per cent of this increase (or 1,505,000 cords) is attributable to the utilization of more hardwoods and more chips from wood residues of all forms. Georgia led all of the states in roundwood and residue wood usage. However, Georgia was third in total cords of wood residues used in 1958, behind Arkansas and Texas. These latter two states placed third and fifth respectively in the same category for 1959. Chips from other residue sources—veneer cores, pole and piling trim, cull crossties, etc. (other than sawmill chips)—comprised 77,700 cords in 1959. Of this, 89 per cent were hardwood chips. The statistics shown in the table here have been condensed from the U.S.D.A. data by *A. P. Schnyder, consulting engineer, Lummus Co.*

State	1000 Cords Consumption	% Hardwood Roundwood	Wood residues (purchased)[2] % Pine	% Hardwood
Arkansas	1,524	12	21	*
Texas	1,416	15	20	1
North Carolina	2,146	19	13	2
Alabama	2,931	15	10	2
South Carolina	1,933	19	10	2
Louisiana	1,800	17	9	2
Mississippi	2,016	42	5	2
Georgia	4,735	7	7	*
Florida[1]	2,113	5	6	*
Virginia	1,728	23	4	*
Tennessee	353	41	*	2
Oklahoma	55	16	30	0
All States, 1959	22,750	17	10	1
All States, 1958	20,233	15	8	1

(1) Amount of consumption doubtful
(2) Obtained from saw mills

* Less than one per cent

Potential Applications of Cold Soda Pulp Have Not Been Fully Explored

Comparing Chemi-Mechanical Pulps: How They Are Used

Data is presented evaluating cold soda, chemi-groundwood, Stora-Brite and other processes. Their use in various grades of paper and board are described.

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Western Michigan University,
Kalamazoo, Mich.

A considerable amount of work was done by Brecht and Pulst **(43)**, **(44)** at the Darmstadt Technical University comparing mechanical pulps from untreated and treated wood species. The comparison was done on four different wood species (spruce, poplar, beech, and birch) using five different methods of wood impregnation and grinding the wood on a semi-commercial grinder. Results of their investigation showed that chemical pretreatment and especially the chemi-groundwood process improves the tear value considerably. In all cases the poplar was superior to two other hardwood species. All mild and strong pretreatments considerably increased the folding endurance of spruce pulp. Extremely high folding endurance and high tensile could be obtained from poplar treated by the chemi-groundwood method. Wet web strength values are, as one can expect, much higher for spruce than for treated hardwoods. The only pulp which increased its wet web strength from 0 to 70 gr. was the one prepared by the chemi-groundwood method.

To compare cold soda pulp with the results of Brecht's investigation, a sample of commercially produced cold soda pulp from aspen wood was shipped by the author to Darmstadt for strength evaluation. This was refiner-bleached pulp collected from the washer of the cold soda mill at Filer City, Mich. The results of this evaluation by the German Standard Method are summarized on Table III.

The fiber fractionation study of cold soda pulp showed that a high percentage of long and short fibers and their sum account for nearly 73 per cent of the total fibers, which was similar to the value obtained by Brecht and Pulst **(43)** from poplar and birch using the chemi-groundwood process. It is known that lower strength (and particularly wet strength) of groundwood made from hardwoods without pretreatment compared with that of spruce is due to unfavorable distribution of fiber fraction in the hardwood groundwood. This could be overcome by chemical treatment using the chemi-groundwood or cold soda process.

Comparison of strength properties of commercial cold soda pulp vs. commercial groundwood carried out at Western Michigan University showed that cold soda pulp from aspen wood has much higer tensile strength, burst value, tear value, and number of double folds as measured by the TAPPI standard methods (See Fig. 11).

The work of Brecht and Pulst **(43)** produced a wide comparison of groundwoods prepared from untreated and chemically treated soft- and hardwoods. On softwoods the best results were obtained by pre-cooking with sulphite liquor, or by the chemi-groundwood process. For hardwoods the chemi-groundwood and cold soda processes gave considerably better results than any of the other processes. It is claimed that the Stora-Brite process gave pulp strength much higher than groundwood and approached that of unbleached sulphite pulp. Also the brightness of unbleached spruce sulphite pulp was lower than the corresponding unbleached brightness of Stora-Brite pulp from birch **(10)**. A comparison of various kinds of high-yield pulp ranging from 88 to 97 per cent in yield prepared by different processes from aspen, a mixture of denser hardwoods and also from balsam fir and western hemlock was carried out by Chidester, Loundrie and Keller **(45)**. From the results of their studies it can be concluded that pulps in high yield range can be made by several processes with properties varying with the woods used and pulping conditions. They also found that the value of chemi-mechanical pulps lies in the fact that in some instances the hardwood pulps can be substituted for softwood pulps, and in other instances the high-yield pulps can be substituted for low-yield pulps.

In general it can be concluded that the choice of pulping processes used is largely dependent on the potential supply of raw materials, the final quality of paper and board, the ex-

TABLE III

STRENGTH EVALUATION BY THE GERMAN STANDARD METHOD OF UNDRIED COMMERCIAL COLD SODA PULP.*

No.	Method Used	
1	Slowness °S.R.	41
2	Tensile (meters)	3140
3	Tear (Brecht-Imset) in cmg/cm	83
4	Folding endurance	16
5	Wet web strength at 16 percent b.d. and 75 g/m² in grams	88

*Acknowledgement is due to Professor W. Brecht and his staff for this investigation.

isting pulping operation, mill location, bleaching costs, etc. All of the existing chemi-mechanical processes have their advantages and disadvantages and at the present time these processes can be classified into three different groups:

1. Process where pulps are produced from chips by alkaline treatment (cold soda process).

2. Processes where pulps are produced from logs using NSSC liquor treatment or sodium sulphite treatment and conventional grinders (chemi-groundwood process, A.L.B. process).

3. Processes where pulps are produced from chips using NSSC liquor treatment and refining (Stora-Brite, Blandin process, etc.).

Generally, we can say that chemi-mechanical pulps with yields of 80-95 per cent present a new kind of raw material for paper and board which can take an intermediate position between groundwood and semi-chemical pulps.

The author agrees that chemi-mechanical pulps produced by the NSSC process create a great amount of misunderstanding, especially when they are prepared at elevated temperatures. This is understandable because at this high yield the change from say, 90 to 80 per cent usually yields a pulp with lower bulk and opacity, leaning more towards NSSC or sulphite pulp than groundwood.

This "in-between" position of chemi-mechanical pulps is evident during beating. While the strength of conventional groundwoods is not affected or adversely affected by the beating, most of the chemi-mechanical pulps are showing appreciable gains (see Fig. 11).

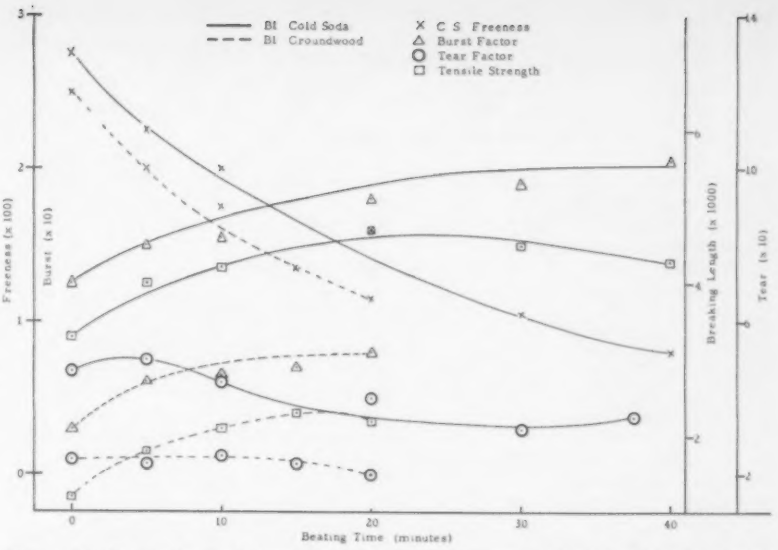

Figure 11: Comparison of strength properties of commercial cold soda pulp versus commercial groundwood pulp.

Present and Potential Applications Of Cold Soda Pulp

Cold soda pulp can be used as a furnish in different kinds of paper and board.

Books, Magazines, & Fine Papers

Chemi-mechanical pulps allow substitution for both softwood groundwood and chemical pulps offering cost reduction in proportion to the percentage of cold soda pulp added. It appears that up to 50 per cent of the furnish could be pulps of the cold soda type. Lower opacity of cold soda pulp is the limiting factor. It seems possible that a high percentage of bleached cold soda pulp can be used for the production of coated papers and high groundwood content book paper. Coating could overcome the opacity factors, and the surface characteristics of papers containing these pulps should provide a good coating base.

The first installation for the production of cold soda pulp for book paper has worked successfully for four years at Lyons Falls, New York. The promising quality of cold soda pulp known in the laboratory for many years has been confirmed in practice. In this mill the cold soda pulp is used as a direct substitute for spruce groundwood. The strengths of hardwood cold soda pulp prepared from a mixture of beech, birch, and maple with a Canadian Standard Freeness of 175-200 ml. equal that of spruce groundwood having a C.s.f. of 65 to 100 ml. In respect to drainage on the wire and facilitated drying, the addition of cold soda pulp to furnish proves to be superior to spruce groundwood. Some improvements in formation, finish and in supercalandering characteristics have been noticed. In other papermaking properties evaluated on the paper machine, cold soda pulps are equivalent to spruce groundwood. Several publishers have evaluated the printing quality of book paper from the Gould Paper Co. containing cold soda pulp and have reported either an improvement or no adverse effect on the printing quality.

Of prime importance is the fact that chemically pretreated cold soda pulp (and other chemi-mechanical pulps) allows substitution for softwood groundwood and could reduce the amount of chemical pulps, affording substantial cost reduction.

Generally, one can say that cold soda pulp from hardwoods could be utilized interchangeably with stone groundwoods in all grades presently using such pulps for the production of book, magazine, and fine papers.

Newsprint

A considerable amount of newsprint is already produced from unbleached cold soda pulp in U.S.A., Australia, and Japan. Bowaters Southern Paper Corp., Calhoun, Tenn. and Coosa River Newsprint Co., Coosa Pines, Ala., started production of newsprint containing cold soda pulp in 1957. A newsprint mill in Boyer, Australia and Daishowa Paper Manufacturing Co. in Japan also have been using cold soda pulp in their newsprint furnish since 1957. It was reported that two Japanese mills are producing newsprint made with 40 per cent cold soda and sodium sulphite chemi-mechanical hardwood pulps **(46)**. An interesting comparison was made in Australia on paper machine performance, with and without the addition of cold soda pulp to the furnish **(47)**. When the composition of newsprint furnish was changed from 81 per cent groundwood and 19 per cent kraft pulp to 62 per cent groundwood and

TABLE IV. LIST OF CHEMI-MECHANICAL PULP MILLS

Cold Soda Mills*

United States

No.	Company	Furnish Use	Capacity (Short tons/day)
1	Bowaters Southern Calhoun, Tenn.	Newsprint	175
2	Champion Paper and Fibre Pasadena, Texas	Publication Grades	25-50
3	Continental Can Co. Augusta, Ga.	Bleached Food Board	125
4	Coosa River Newsprint Coosa Pines, Ala.	Newsprint	35
5	Diamond-National Ogdensburg, N. Y.	Moulded Pulp Products	35
6	Gould Paper Company Lyons Falls, N. Y.	Publication Papers	70
7	Packaging Corporation Filer City, Mich.	Coated Food Board	60
8	Stone Container Corp. Coshecton, Ohio	Corrugating Medium	110
9	Waldorf Paper Products St. Paul, Minn.	Paperboard	80
		Total	690

Foreign

10	Associated Pulp & Paper Co. Tasmania, Australia	Building Board Products	10-12
11	Australian Newsprint Mills, Ltd. Boyer, Tasmania, Australia	Newsprint	70-80
12	Carton de Colombia, S. A. Cali, Colombia, S. A.	Corrugating Medium	75-80
13	Celulos Argentina Buenos Aires, Argentina	Book and Magazine Grade Coating Papers	10
14	Daishowa Paper Co. Friji, Japan	Newsprint	60
15	Invest-Import	Medium and Fine Papers	27.5
16	Oji Paper Co., Ltd. Tokyo, Japan ..	Newsprint	132
17	Tahoku Pulp Co. Japan	Newsprint	30
18	Vita Mayer Co. Milan, Italy	Toilet Tissue	33
		Total	557

Chemi-Groundwood Mills

1	Great Northern Paper Co. Millinocket, Me.	Newsprint	400
2	Societe F. Beghin S. A.	Newsprint	100
3	Khulna Newsprint Mill East Pakistan	Newsprint and Printing Papers	?

Stora-Brite Process

1	Stora Kopparberg A. B. Kvarnsveden, Sweden	Newsprint	55-60

A. L. B. Semicell Process

1	Ybbstaler Pappenfabriken Adolf Leitner and Bruder Austria	Board	?

Blandin Process

1	Blandin Paper Co. Grand Rapids, Minn.	Printing Papers	32

*Acknowledgement is due to John C. W. Evans for supplying the list of cold soda mills.

19 per cent cold soda and 19 per cent kraft, higher speed of the machine could be obtained. Thus, when cold soda pulp was used, it resulted in an annual increase in production of over 2500 tons of newsprint.

Liner Board

This kind of pulp can be used in liner board as a "filler" for blending with long fibered stock or for secondary headbox additions to the sheet. This last possibility seems to be quite attractive because such an addition will provide a lighter colored liner with a good printing surface. This is of great importance because the printability of box surfaces has become more and more important as consumers demand higher printing quality of the liner board and boxes.

Corrugating Medium

Nine point corrugating medium can be produced from cold soda pulp. The major advantages over the NSSC process are lower installation cost, less stream pollution due to higher yields, low steam and chemical consumption. The Stone Container Corp. at Coshocton, Ohio, is producing 60 to 65 tons daily of nine point corrugating medium. Mixed hardwood species and saw mill waste are used. Caustic consumption is 10 per cent per b.d. wood. Total horsepower used (with jordaning and pumping) is equal to 25.4 h.p. day/ton. Comparison of C.M.T. values of board produced from NSSC and cold soda pulp gave similar results for both pulps.

Investigations reported by Chidester (48) on three different hardwood species from the West Coast, red alder, tan oak, and big leaf maple, showed that treating temperature of about 55°C and caustic soda solution of about 50 grams per liter gave the best results for each wood except tan oak which required a higher concentration of 65 grams per liter. Corrugating board produced by a continuous process in the Forest Products Laboratory from aspen, red alder, tan oak and big leaf maple had good physical properties in comparison with the commercial board produced by the NSSC process.

Food and Packaging Board

Runs of blends of kraft and cold soda at research institutions and production data obtained at the Packaging Corp. of America, Filer City, Mich. mill show that food board of a good quality can be produced in semi-commercial and commercial operations. It was shown that boards of different bulk, stiffness, and cali-

per values can be obtained from different blends of bleached cold soda with bleached kraft pulp. The lower brightness of the board reached 70 per cent G.E. when a 50-50 per cent blend was used and could be improved to 77-78 per cent G.E. by coating. The major advantages of this new food board are lower cost, high caliper, and stiffness value. Dyer (49) has described the new cold soda mill at Filer City in detail, as well as a new one (50) at Augusta, Ga., also for use in these boards. The different ranges of caliper and stiffness which could be obtained promise a wide application in the field of plate stock, frozen foods, wax boards, laminating boards, butter or milk cartons, etc.

Boxboards

Cold soda pulp could be utilized as an addition to folding boxboard top liner and underliner stock, improving surface characteristics and printability. It is claimed that there would be no difficulties in direct replacement of softwood groundwood type pulps by hardwood cold soda pulp. This is especially important where waste paper as filler stock is objectionable for sanitary reasons, e.g. cartons or boxes for frozen food. It seems also possible to use this low cost pulp for 100 per cent waste paper filler stock (chipboard, newsboard, bending chip, etc.). Contamination of unselected waste paper by adhesives, gums, cellophane, plastic coating, wet strength rosin, foils, etc. makes waste paper increasingly harder to handle and considerably decreases the yield. Chidester (48) reports from Forest Products Laboratory, that experiments were conducted on the use of cold soda from sweet gum and aspen for folding boxboard manufacture. Boxboard was made from pulp furnishes containing 30 to 100 per cent bleached cold soda pulp. Performance tests on fabricated cartons were quite favorable.

Moulded Products

The Diamond Gardner Co. is utilizing cold soda pulp in their molded products. It was stated that Diamond molded product plants are using cold soda-groundwood blend in molded plates and molded egg carton production.

Toilet Tissue

Vita Mayer and Co., Milano, Italy, is producing toilet tissue from cold soda pulp. This company plans to use 10 to 15 per cent long fibered chemical pulp and 85 to 90 per cent cold soda pulp from poplar.

Use of Other Chemi-Mechanical Pulps

Chemi-groundwood produced at the Great Northern Paper Co. is used for newsprint production containing about 62 per cent regular groundwood, 30 per cent chemi-groundwood and 8 per cent sulphite for older machines running at 1000 f.p.m. and containing 58 per cent groundwood, 30 per cent chemi-groundwood annd 12 per cent sulphite for the new machines running at 1800 feet per minute. It is also claimed that fine printing papers have been made using 30 per cent of bleached chemi-groundwood with a sulphite pulp reduction of 50 per cent. The Stora-Brite pulp is mainly used for newsprint. It is claimed by Wultsch (51) that A.L.B. pulp could be used in printing papers, tissue papers, pads, and board. The chemi-mechanical pulp produced by the Blandin Paper Co. by the NSSC process from softwoods with a yield of over 90 per cent is used to the extent of 20 per cent of fiber furnish on coated base stock running at 1450 feet per minute. In this case it is substituted for 10 per cent each of groundwood and chemical pulp (52).

Investment and Working Capital

Investment and working capital for different pulping processes were reported by Diehm (53). He compared five different processes on a 100 ton mill basis and found that unbleached and bleached groundwood and cold soda processes have identical low investment costs per A.D. ton of unbleached or bleached pulp ($22,500 for unbleached vs. $30,000 for bleached pulp). These costs are higher for pulps produced by NSSC, sulphite or kraft processes. For example, the investment for unbleached NSSC pulp was estimated by the same author to be $36,000 per ton of unbleached pulp and $41,000 per ton of bleached pulp. Because most of the new processes (see Table I) require buffered sodium sulphite solutions and subsequently a liquor preparation plant, one can expect the investment costs for new mills using chemi-groundwood, A.L.B. or Stora-Brite processes to be somewhere close to the cost of the NSSC process for unbleached pulp. The working capital required for groundwood, cold soda and NSSC processes was estimated by Diehm (53) to be between $13,500 and $14,500 per one air dry ton per day (on a 100 ton mill production basis).

It can be expected that these costs vary considerably due to local conditions, process applied, building and engineering costs, etc. For example, the investment costs for a cold soda pulp mill could be cut considerably by using refiner bleaching instead of tower bleaching.

Conclusion

The amount of experimental and operating data give us reason to believe that the development of chemi-mechanical pulps might be the beginning of a revolution in the production of pulp and paper products. This could affect the distribution of pulp and paper mills throughout the country and create new paper making centers where little or no softwoods are available (Southern hemisphere).

It seems that the possibilities of different uses of chemi-mechanical pulps are not yet explored, and the limits and markets depend only on the ingenuity of the research workers, operating personnel, and the engineers involved.

Acknowledgment

Acknowledgement is due to the management of the American Box Board Division of Packaging Corp. of America for permission to publish this paper. Furthermore, the author acknowledges the assistance of different research organizations and producers of chemi-mechanical pulps making this publication possible.

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(This is the conclusion of the extensive article on chemi-mechanical pulps by Dr. Von Koeppen which has appeared in the previous two issues.)

PJT NEWS OF SUPPLIERS

Stora Kopparberg Corp. has appointed Morrison S. Horton district manager—pulp sales.

Effective May 1, Mr. Horton will be responsible for sales of pulp in the Midwest and Southeastern States from Stora's new pulp mill now being constructed by an affiliate, Nova Scotia Pulp, Ltd., on Cape Breton Island, Nova Scotia. He will also handle the sale of Stora's well-known Swedish grades in these same areas.

For the past ten years Mr. Horton has been associated with Mead Pulp Sales Co., Inc., prior to which he was with the Pulp Division of St. Regis Sales Corp. in the Midwest. Mr. Horton attended Princeton University and, during World War II, served in the United States Navy.

Allied Chemical Corp., has announced the appointment of Elwood F. Booth, Jr., as director of research for the Solvay Process Division.

Dr. Booth succeeds Herbert C. Wohlers, who has been transferred to Allied Chemical's National Aniline Division as director of research and development.

An alumnus of St. Lawrence and Syracuse Universities, Dr. Booth joined Solvay Process in 1951. While earning his doctorate at Syracuse University, he served as an instructor in chemical engineering.

He has been assistant chief engineer and assistant manager of Solvay's Syracuse, N. Y., plant, and earlier this year was named an assistant director of research. He will continue to be located at Syracuse, N. Y.

Allis-Chalmers Mfg. Co. announces the appointment of Roy M. Casper as general manager, Power Equipment Division, effective May 1. He succeeds J. W. McMullen, who is retiring after some 45 years of service with the company.

Mr. Casper joined A-C in 1936 as a sales representative in the Detroit office. He was elected a vice president of the company in 1959.

Mr. McMullen, a vice president of the company since 1954, has been general manager of the power equipment division since June, 1955. He started with the former Pittsburgh Transformer Co. in 1917.

M. S. Horton

G. E. Soyka

Lodding Engineering Corp., Auburn, Mass., has appointed George E. Soyka executive sales agent for Mexico and Latin America. Mr. Soyka will handle sales of Lodding products through his affiliation with Manuel Del Castillo. The firm of Castillo Y Soyka is located at Isabel La Catolica 45, Mexico (1) D.F., Mexico. Castillo Y Soyka represents several other American manufacturers in the Mexican and Latin American markets.

For the past two years, Dr. Soyka has headed a pulp and paper industry consulting firm, George E. Soyka and Associates, with offices in Andover, Mass.

Prior to entering the consulting field, he was technical director of Bolton-Emerson and the Pulp and Paper Research Center of Lawrence, Mass. He has also held executive and technical positions in several paper mills.

Olin Mathieson Chemical Corp. recently dedicated its $7,500,000 Olin Research Center in New Haven, Conn., where the company has concentrated all cellophane packaging, film, organic and inorganic chemicals, fuels and propellants, explosives, metals, firearms, and ammunition research. During the past two years, Olin has spent nearly $3,000,000 in improvement of facilities and consolidation of these activities at New Haven. Olin is one of the three producers of cellophane in this country. The manufacturing plants are located at Pisgah Forest and Covington, Ind.

The main purpose of the Film Evaluation Group in New Haven is to measure the physical properties of products under conditions representative of use. The laboratory is comprised of six rooms in which can be duplicated extreme climatic conditions for extreme cold, dry climate to jungle climate. Physical tests performed include water vapor transmission properties, instron tensile strength, pendulum impact tests, tumble tests, and flexibility under frigid conditions.

A. E. Staley Manufacturing Co., Decatur, Ill., corn, soybean and chemical processing concern, has announced appointment of James A. Bralley as manager of the research and development division. He succeeds Thomas L. Gresham, who is leaving the company.

Dr. Gresham, who has headed Staley's research program since March 1956, will receive an honorary degree of doctor of science from Emory University June 5 in recognition of his contributions to science over a career spanning 29 years.

Dr. Bralley has been with Staley's since July 1956, as director of research and head of the chemical research department. He came to Decatur from Bristol, Pa., where he was with Rohm and Haas Co. for 10 years as senior chemist.

Dr. Bralley graduated from the University of Virginia in 1936, continued graduate studies there, and received his doctorate in 1941. He had been associated with Dr. Gresham throughout the Staley research build-up of recent years.

E. Eugene Fisher succeeds Dr. Bralley as director of chemical research. Dr. Fisher has been manager of the polychemicals research section since last year, and was previously exploratory research group leader. He joined Staley's in 1958.

L. E. Doxsie, corn division manager, has been promoted to take over the executive responsibilities of the corn division and succeed L. S. Roehm on the company's operating committee.

Mr. Roehm, who headed the corn division for several years and has been vice president over the Staley corn, grocery products and overseas divisions, has resigned to become a vice president of Merck & Co., Inc., Rahway, N. J.

Dobeckmun Co., a division of Dow Chemical Co., has named two new district managers. They are: Arthur J. Myers, who will head the Cleveland district; and George F. Klein, who assumed the same position in Chicago.

Mr. Myers joined the company in 1953 and has been a sales representative in Cleveland for the past two and a half years.

Mr. Klein has been associated with

magic wand cuts packaging costs by upgrading cheap chipboard into **SALESMEN** for your product

GLIDDEN ZOPAQUE®
LD-C

Made especially for the paper industry, a new anatase grade TiO_2–GLIDDEN ZOPAQUE *LD-C*–combines the best features of anatase and rutile grades for paper coating.

GLIDDEN ZOPAQUE *LD-C* gives you the better brightness of anatase TiO_2 with the ease of dispersion and low viscosity features of rutile grades.

Glidden QUALITY PRODUCTS

THE GLIDDEN COMPANY

FINEST PIGMENTS FOR INDUSTRY

Chemicals Division • Pigments and Color Department

Baltimore 26, Maryland

SEE OTHER SIDE FOR MORE INFORMATION

GLIDDEN ZOPAQUE® LD-C

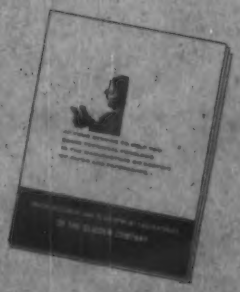
new anatase grade titanium dioxide gives properties of rutile, savings as much as 2¢ per pound

SEE SAMPLE ON OTHER SIDE OF THIS PAGE

New GLIDDEN ZOPAQUE *LD-C* is equally suited for on and off machine, size press and calender coating. It is compatible with all other common paper coating adhesives and pigments.

Being an anatase grade TiO_2, new *LD-C* is for coating all nonwaxing, plain and printed paper and board. Higher machine speeds, heavier coating weights and other advantages are inherent in new *LD-C*. For technical information or samples, call your Glidden representative or write address below.

NEW BROCHURE—*Paper Research and Development Laboratories* describes the many Glidden technical facilities now at your service for development or testing work in paper. Just off the press.



QUALITY Glidden PRODUCTS

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FINEST PIGMENTS FOR INDUSTRY
Chemicals Division • Pigments and Color Department
Baltimore 26, Ohio

Dobeckmun since 1953. He was transferred from inside sales to the Chicago territory in July, 1954.

Mr. Myers replaces George A. Fendrick, who has left the company, and Mr. Klein succeeds Robert J. Smith, who was recently promoted to northwest regional sales manager.

Virginia Smelting Co. announces a change in name to **Virginia Chemicals & Smelting Co.** The company is actively engaged in the manufacture and sale of chemicals, refrigeration products and aerosols which are being marketed both domestically and overseas.

Rockwell Manufacturing Co. has named Thomas O. Carson assistant vice president, Meter & Valve Division sales.

Mr. Carson, who has been Central region manager, will headquarter in Pittsburgh and be responsible for coordinating sales of all Meter & Valve Division products east of the Mississippi. Succeeding Mr. Carson is D. H. Shoemaker, Pittsburgh district manager since 1957.

Chain Belt Co., Milwaukee, Wis., has appointed Beryle W. Wright district sales manager of its Portland, Ore., office.

Mr. Wright has been with Chain Belt since 1951 when he joined the Portland office as a sales engineer. He was born in Oregon City and attended both Oregon State College and Colorado University.

H. W. Butterworth & Sons Co. has announced a sales expansion program aimed at securing broader coverage of the paper industry, particularly in the sales and servicing of calender rolls.

Eric B. Norman, formerly assistant sales manager of B. F. Perkins & Son, Inc., Holyoke, Mass., and Amos Good, who has been associated with papermaking machinery builders, are now sales and service representatives working out of the Butterworth home office.

Mr. Norman was with Perkins from 1952 to 1960, and served on national committees dealing with calendering, calendering machinery, and rolls. He will represent Butterworth on the West Coast, and in New York State, Michigan, Wisconsin, and Canada.

Mr. Good has covered the paper industry for Moore & White Co., and Sandy Hill Iron & Brass Works. He was also associated with Riegel Paper Co. He will represent Butterworth in the South, and in the Middle Atlantic States.

Goulds Pumps, Inc., Seneca Falls, N. Y., announces that A. J. Herrmann has become associated with the company as engineering product manager. Prior to joining the Goulds' organization he was with Dean Bros. Pumps, Inc., Indianapolis, for eight years where he was a vice president and chief engineer.

Mr. Herrmann is a graduate of Purdue University where he received his Bachelor's degree in mechanical engineering in 1946. He also holds a Master's degree in mechanical engineering from the same university. On leaving college he taught fluid mechanics and thermodynamics and was a research assistant in fluid mechanics at Purdue. Later he was a process engineer with Goodyear Tire and Rubber Co.

A. J. Herrmann

R. E. Eddy

P. M. Henry

Orell Collins

Nalco Chemical Co., Chicago-based manufacturer of water conditioning, petroleum treating and other industrial chemicals, has promoted R. E. Eddy, Orell Collins and P. M. Henry to Industrial Division district managers.

Mr. Henry moves to his new post as manager of the company's Mid-South district from the Pacific Northwest, where he was a district representative.

Mr. Eddy, formerly product manager of Nalco's Papermaking Chemicals department in Chicago, takes over the Southeastern district with headquarters in Jacksonville, Fla.; Mr. Collins, who was area manager in Nalco's Texas district, heads a newly created South Atlantic district, with offices in Charlotte, N. C. The South Atlantic district was portioned from a larger Southeastern district, previously under the managership of T. G. Cocks, who recently moved to Chicago as vice president of Nalco.

Monsanto Chemical Co.'s Plastics Division, Springfield, Mass., has promoted Chester L. Jones, director of sales, resin products, to assistant director of marketing. Edmond S. Bauer, product administrator, resins and coatings, has been promoted to replace Mr. Jones as director of sales, resin products.

Mr. Jones, a native of Missouri, joined Monsanto's research department in 1936 after graduation from Yale University with a B.S. degree.

Mr. Bauer, a native of New Jersey, received his B.S. in chemical engineering from Newark College of Engineering in 1939. Before joining Monsanto's Plastics Division's research department in 1942, Mr. Bauer was associated with Flood & Conklin Manufacturing Co. and manager of a subsidiary plant. In 1959 he was named product administrator, resin products.

Hercules Powder Co. has appointed Alfred E. Van Wirt manager of its Imperial Color Chemical & Paper department. The appointment is effective immediately.

A native of Glens Falls, N. Y., Mr. Van Wirt has almost 38 years of experience in all phases of the department's operation. He succeeds Arthur F. Brown, who retired on April 1.

Courtney Engineering, Oakland, Calif., has been named sales agent for Conoflow Corp., leading manufacturer of final control elements. J. Robert Simpson, Conoflow's vice president in charge of sales, announced that the Courtney firm will be exclusive representative for Conoflow in northern California.

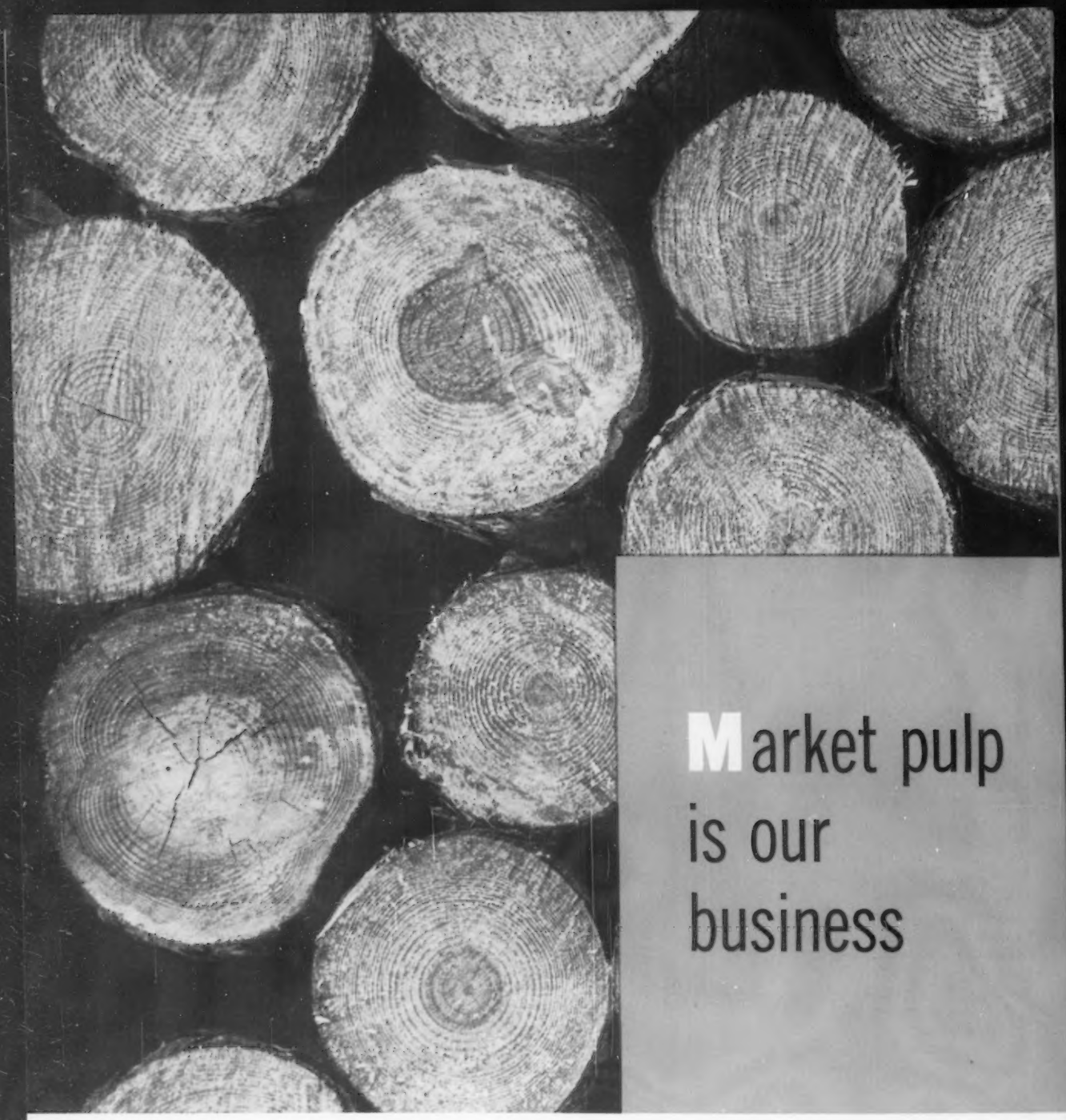
Johns-Manville Sales Corp., has assigned Robert D. Wisbon to the Philadelphia, Pa., territory as sales representative.

Mr. Wisbon previously served as assistant industrial relations manager for the J-M Fiber Glass Division, headquartering in Toledo, Ohio. He joined J-M's predecessor, L.O.F. Glass Fibers, Inc., in 1957. He was graduated from the University of Toledo with a B.S. degree.

Also announced is the appointment of Thomas D. Hoffstatter as sales representative in the Tulsa, Okla., territory. He will report to Richard Harper, head of the Dallas, Texas, sales area.

Employed by J-M about one year ago, Mr. Hoffstatter is a former salesman for Dresden Fabrics of New York City. He attended Clemson College in South Carolina and the University of Connecticut.

(Continued on page 39)



Market pulp is our business

HOW BUCKEYE RESEARCH AIDS THE PAPER INDUSTRY

An extensive research program has helped Buckeye earn its reputation as a leader in bleached krafts for the paper industry. Buckeye technical facilities and staff of over 200 now comprise one of the world's most complete pulp centers. In the forests, Buckeye research is resulting in faster growing trees with improved pulp characteristics. In the plant, it has brought about such refinements as a unique system of double screening and 8-stage bleaching.

Our technical staff and modern laboratories are available to Buckeye customers for research

BUCKEYE

The electron microscope permits direct study of fiber surfaces and their effect on pulp characteristics.

projects of mutual interest. Phone us for further information, or write for our new brochure on pulps for the paper industry.

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Also cotton linter pulp and chemically modified cotton linter pulp

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Your Invitation To...

"A practical monograph covering design and operation of fourdrinier paper machines from stuff box to couch"

Written with the young operating engineers and technicians in mind, this book has great value to experienced practical papermakers as well. Five vital chapters cover . . . Stock and White Water Systems . . . Headboxes and Slices . . . The Auxiliary Components . . . Troubleshooting . . . Curing Paper Defects at the Wet End . . . It will be to your advantage to accept our invitation immediately. We have already had an unusual number of requests for the book even before publication was announced.

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News of Suppliers

(Continued from page 35)

Nalco Chemical Co. announces the promotion of J. R. Nelson, to product manager of its Industrial Division Papermaking Chemicals department. He succeeds R. E. Eddy, who was recently advanced to manager of the division's Southeastern sales district.

Concurrently, chemist J. V. LaMarre was assigned to the product department's technical staff, coming from Nalco's papermaking chemicals laboratory.

N. Shoumatoff

Parsons & Whittemore-Lyddon Organization announces that Nicholas Shoumatoff has joined the firm as an executive engineer in the Pulp & Paper Mill Project Division, Lyddon Co., Ltd., London, England. As chief engineer, he will supervise the contract engineering, design engineering, and purchasing groups. Mr. Shoumatoff assumed his duties in London on April 1 under W. O. Hisey, director of Lyddon, who is in charge of the planning and engineering of all mill projects assigned to the London office.

Formerly manager of manufacturing services, West Virginia Pulp & Paper Co., Mr. Shoumatoff has 17 years of broad engineering experience in pulp and paper manufacture.

J. J. Tepper Corp., New York, N. Y., has announced that George R. Hoffman, former chairman of the board of the Biddle Purchasing Co., and more recently associated with the United States Plywood Corp. as a marketing consultant, has joined the company.

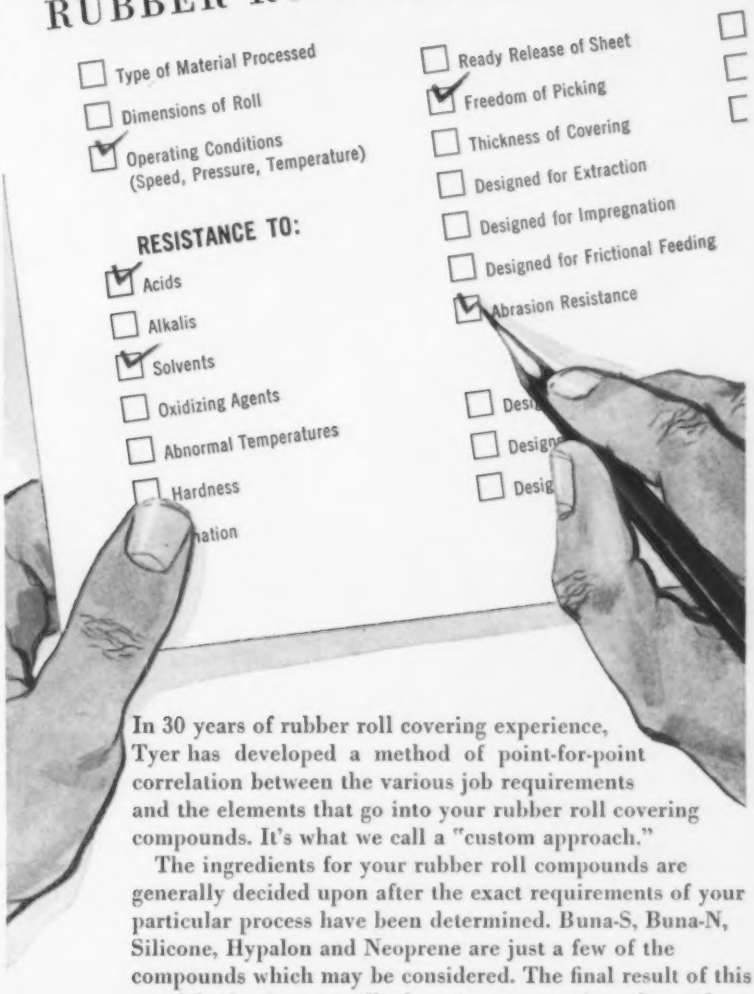
Mr. Hoffman will establish and direct a department of Market Counselling for the Tepper organization which is a specialist in business acquisitions, sales, mergers and special situations in the paper field.

American Viscose Corp., Philadelphia, which makes and markets the new "Avistrap" Cord Strapping, the super-strength rayon packaging material, has named Julian Robbins

TYER'S CUSTOM APPROACH TO...

RUBBER ROLL COMPOUND SELECTION

First we check your . . .



In 30 years of rubber roll covering experience, Tyer has developed a method of point-for-point correlation between the various job requirements and the elements that go into your rubber roll covering compounds. It's what we call a "custom approach."

The ingredients for your rubber roll compounds are generally decided upon after the exact requirements of your particular process have been determined. Buna-S, Buna-N, Silicone, Hypalon and Neoprene are just a few of the compounds which may be considered. The final result of this careful selection are rolls that give you consistently good performance and maximum wear.

Write today for additional information or a visit from a Tyer sales engineer.

TYER

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ENGINEERS
PROCESS STUDIES, DESIGN, SPECIFICATIONS, CONSTRUCTION SUPERVISION
PULP AND PAPER MILLS
STEAM, HYDRAULIC AND ELECTRICAL ENGINEERING
REPORTS, CONSULTATION, VALUATIONS
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Engineers • Designers • Consultants
Specializing since 1923 in all phases of design, modernization and expansion of pulp and paper mills from forest to finished product.
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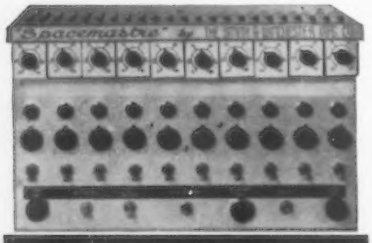


NOW! SMITH & WINCHESTER WILL AUTOMATE THE BACKGAUGE MOVEMENT OF YOUR EXISTING TRIMMERS WITH
Spacemastre
THE ELECTRONIC BACKGAUGE CONTROL

- Increase production, lower operating costs with accelerated trim cycle.
- Automatic electronic settings assure greater accuracy. TV type knobs simplify dimensional changes.
- Spacemastre *protects your present investment.* Your trimmers need not become obsolete!
- Spacemastre can be installed on any width or length guillotine type trimmer that has a screw operated backgauge . . . will pay for itself in a very short time.

LEARN ALL THE FACTS! Write for bulletin 65. Dept. PJ
SMITH & WINCHESTER
South Windham, Conn.
SMITH & WINCHESTER — SPECIALISTS IN SHEETING AND CUTTING EQUIPMENT

a sales representative in the Los Angeles district office of its Industrial Packaging Department.

Mr. Robbins will assist S. Bradstreet Hoyt, Los Angeles district manager. The office, one of eight in key cities throughout the U. S., is located at 633 Corsair st., Los Angeles 22.

Mr. Robbins was transferred to the Industrial Packaging Department of American Viscose in Los Angeles from American Viscose's Film Division, Los Angeles, where he was a technical service representative in the Sales Department.

Hills-McCanna Co. executive and general offices, formerly located in Chicago, will be moved (effective May 1) to the company's manufacturing plant at 400 Maple Ave., Carpentersville, Ill. The new location is approximately 25 miles northwest of the Chicago city limits, close to the Northwest Tollway and O'Hare Field.

Chicago area field sales personnel, as well as sales and administrative personnel of the Foundry Division, were moved April 10 to 2950 N. Oakley Ave., Chicago, where the company owns and operates a light alloy casting foundry.

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures
(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Mar. 18	Mar. 25	Apr. 1	Apr. 8	Apr. 15
1961	91.2r	91.6r	90.7r	88.9r	93.8
	Mar. 19	Mar. 26	Apr. 2	Apr. 9	Apr. 16
1960	98.7	99.0	97.9	96.6	97.2

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	96.5	97.7	98.1	96.9	97.6	96.1	81.2	91.7	89.1	94.8	92.0	80.2	92.7
1961	87.9	90.0	91.1‡										

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1954	1955	1956	1957	1958	1959	1960	1961
Year to Date	94.1	96.3	101.2	95.9	88.6	91.0	97.4	89.9
Year Average	91.6	96.2	97.9	90.4	87.0	92.2	92.8	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Mar. 18	Mar. 25	Apr. 1	Apr. 8	Apr. 15
1961	91	91	91	86	93
	Mar. 19	Mar. 26	Apr. 2	Apr. 9	Apr. 16
1960	94	93	91	94	95

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	92	95	94	93	94	92	78	94	88	93	86	73	89
1961	88	89	91										

† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	WEEK ENDING April 8, 1961	WEEK ENDING April 15, 1961	CUMULATIVE TO DATE Jan. 1, 1961, to April 15, 1961
% Activity	86%	93%	90%
Total	305,857	315,490	4,540,914
Containerboard—Domestic Use	156,553	158,736	2,296,124
Liner	106,459	104,968	1,524,914
Corrugating Material	46,190	48,684	699,090
Chip & Filler Board	3,904	5,084	72,120
Boxboard—Domestic Use	97,015	99,007	1,429,404
Folding	56,477	59,789	844,772
Set-Up	8,352	10,003	139,690
Special Food Board	32,186	29,215	444,942
Other Paperboard	52,289	57,747	815,386
Containerboard Type	26,765	28,608	389,764
Boxboard Type	25,524	29,139	425,622
Total Orders			
Received	325,808	296,339	
Unfilled End of Week	459,067	435,615	

HYSTER

Two-speed hoist boosts production by 20%

Only

HYSTER® has it!

Compare these cost-cutting *exclusive* features of the new model HYSTER Challenger 60, 70, 80 trucks.

Two-speed hoist system for fast lift with full load —automatic double-speed with partial loads.

Long-life oil clutch gives smoothest operation, trouble-free service up to 10,000 hours.

Full-time full-flow hydraulic filter filters all of the oil all of the time—eliminates troubles caused by dirty hydraulic oil.

Shortest turning radius in the 6,000-8,000 lb. capacity class.

Ask your Hyster dealer to demonstrate the advanced features that set the engineering pace for *all* lift trucks. Call him soon or write for literature.

INDUSTRIAL TRUCK DIVISION—Lift trucks, mobile cranes, straddle carriers
TRACTOR EQUIPMENT DIVISION—Construction and logging equipment
MARTIN TRAILER DIVISION—Heavy machinery hauling trailers
INTERNATIONAL DIVISION—Overseas manufacturing, sales and service

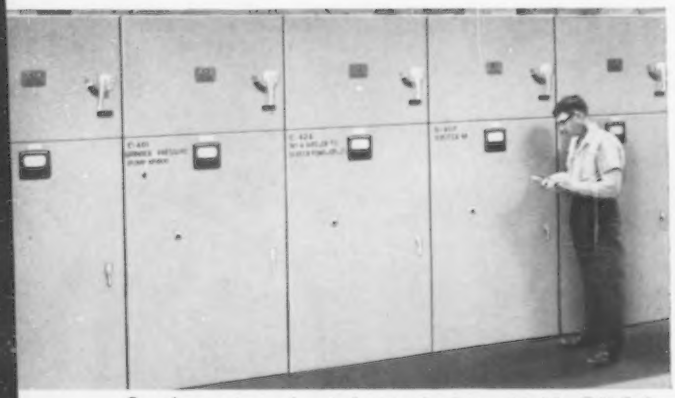
Manufactured in: Portland, Oregon (Home Office) • Danville, Ill. • Peoria, Ill. • Kewanee, Ill.
Australia • Brazil • England • France • The Netherlands • Scotland • Union of South Africa

HYSTER COMPANY
INDUSTRIAL TRUCK DIVISION
P. O. Box 847 Danville, Illinois

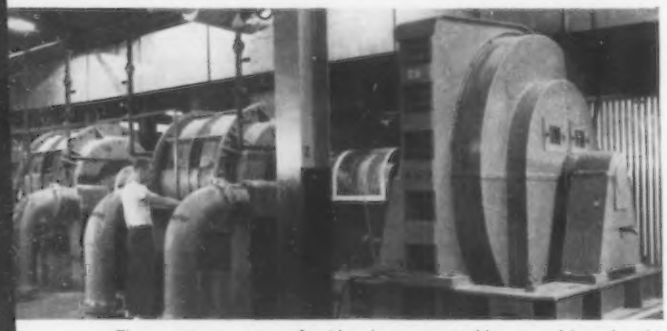
Southland selects E-M for 79,750 motor horsepower and 70 motor controls . . .

WHY?

Because for 20 years E-M apparatus proved its reliability at Southland



Complete motor and control protection is provided by E-M Safuse Controls. Controls shown are for induction motor pump drives and motor-generator sets. Filtered ventilating air in this room keeps maintenance at a minimum.



Three vacuum pumps for No. 4 paper machine are driven by this single E-M pedestal-type, splashproof, synchronous motor. Motor is rated 700 hp, 180 rpm, 1.0 PF, 2300 volts.

24 million gallons of water a day are pumped through this unattended booster pump station. The four E-M splashproof synchronous motors are rated 400 hp, 1800 rpm, 0.8 PF, 2200 volts.

It's in the records at Southland—proof that E-M Motors and Controls stand up to grueling paper mill schedules! Here's why E-M Motors run so well in the paper mills—they . . .

1. Are specially designed for paper mill service. E-M Motors perform "inconspicuously" at Southland. A glance at their service record shows they require practically no unscheduled maintenance. They are designed that way by E-M engineers with 40 years' experience in solving paper industry motor problems.

2. Need little attention. An occasional cleaning and bearing check is all that Southland's E-M Motors require. Duty-matched applications minimize motor maintenance.

3. Lower power costs. Two-thirds of Southland's entire mill power load is consumed by grinder motors. To keep the power bill low, E-M engineers carefully coordinated motor electrical and mechanical designs for most efficient conversion of power.

4. Correct power factor. Unity and 0.8 leading power factor E-M Synchronous Motors help boost Southland mill power factor to over 95%—further reducing power costs.

E-M motor controls also proved more than satisfactory. Besides being highly reliable, Southland's modern E-M Safuse Controls provide all these features:

1. Safeguard personnel, motors, and controls. Foolproof interlocks keep Southland operators safe. High speed current-limiting fuses are matched with sensitive overload relays to protect Southland motors and controls over complete design range of overload and fault conditions.

2. Fully front-accessible for convenience. And because they don't need a wasteful rear aisle, Southland saved valuable floor space and building costs.

3. Simplest, most reliable synchronous motor starting. E-M-invented Polarized Field Frequence Relay starting on all of Southland's E-M Synchronous Motor Controls pulls motors into step smoothly and powerfully every time.

Call the E-M sales engineering office near you for more information about E-M electrical apparatus specially designed for the paper industry. And write the factory for a free copy of *The Paper Mill Number of the E-M Synchronizer.*

Five of 14 E-M Synchronous Motors on pulp grinder drive at Southland. These open-type, self-ventilated motors have top air discharge ducts that exhaust through the ceiling. Only filtered air enters motor room. Motors are rated 5000 hp, 240 rpm, 1.0 PF, 6900 volts.

E-M

ELECTRIC MACHINERY MFG. COMPANY

Minneapolis 13, Minnesota

1200-TPA-2208

Specialists **in making motors do EXACTLY WHAT YOU WANT THEM TO**

NEW EQUIPMENT & SUPPLIES

Several Improvements Made to Paper Machine Hoods

The Ross-Hooper Paper Machine Hood has undergone several design and construction changes, says J. O. Ross Engineering, 730 Third Ave., New York 17, N. Y.

Redesigned features include aluminum clad panels that have added insulation, allowing for the operation of the hood at higher drybulb and dewpoint temperatures. The top hood panels have three inches of insulation, and the front lifting and rear sliding panels have two inches. The shape of the hood, along with an internal revision, allows for the withdrawal of air symmetrically from the front and rear of the paper machine. This is said to improve the air flow through the hood and to simplify both construction and installation.

Continuous windows will be standard. The windows will run the entire length of the front side of the machine for increased "viewability."

Another change is the elimination of the front corner posts. This means that when the lifting curtains are raised, the operating aisle is completely free, giving even greater access to the machine. Even the aluminum used on the new Ross Hooper will be changed. An embossed diamond pattern will be used on the hood for increased rigidity.

The Ross Hooper will still have available dew cell control for constant humidity within the hood, and the panel lifting mechanisms on the roof of the hood will remain exposed for ease of maintenance.

Acrylic Resin Used as Clay Coating Binder

An acrylic film-forming resin, known as Carboset 511 and introduced by B. F. Goodrich Chemical Co., is a water solution of an acrylic polymer that dries at room temperature to a clear, glossy, water insoluble film. It is supplied as a 45 per cent solution in water but is also available in alcohol solution.

Carboset 511 is said to be compatible with water dispersions of most polymers. Even small quantities of Carboset 511 make possible desirable modifications of dispersion and solution coating materials. Films of Carboset 511 are water resistant and will withstand even the effects of boiling water. Thin films can be removed with soap while thicker films can be easily removed with dilute bases. This alkali-solubility of the films is not affected by aging.

The flow characteristics of Carboset 511 solutions and the adhesive properties of their dried films indicate utility in coatings and printing inks for a variety of substrates. Carboset 511 has also demonstrated ability as a clay binder in paper coatings in laboratory tests. It is compatible with common clays and its thermoplastic nature makes it suitable for calendering. B. F. Goodrich Chemical Co., 3135 Euclid Ave., Cleveland 15, Ohio.

Pilot Plant Centrifugal Screen Handles 8 Tons per Day

The Impco A-1.0 Centrifugal Screen is designed specifically for laboratory use where sizeable batches of pulp are to be screened. It is suited for experimental pulping systems using a head tank for uniform feed where a pulp slurry of at least 50 pounds of pulp has been diluted to the proper consistency.

This screen incorporates patented features which are used in full size Impco production screens, and in addition, has flexibility to operate on a wide range of various type pulps. The inward flow characteristics can be varied by the adjustable stock distributing stator, and the important rotor blade-to-plate clearance can be adjusted. Screen plate changes can be made by removing the transparent acrylic housing. Connections to the screen are made by the use

of flexible sleeves. The redilution shower pipe permits control of tailings as on the larger Impco screens.

The screen will handle throughput rates from approximately 2 tons per 24 hours of groundwood to 8 tons per day of linerboard softwood kraft. The capacity would be related to the hole size, this being selected for a particular fiber. The shower flow is 3 to 10 g.p.m. The feed consistency range varies from 0.5 to 1.5 per cent. Normally, all the rejects are separated with just a trace of fiber. The accepted stock varies from 0.4 to 1.4 consistency, depending upon the feed conditions and the amount of shower water used, while the rejects thicken

FLUIDICS* AT WORK

New plastic coating from Pfaudler resists most corrosives to 210°F.

Here's an economical way to protect your equipment from the corrosive effects of direct product contact and ambient corrosive atmospheres.

It's Pfaudlon 301,* a water suspension of Hercules Penton† developed by Pfaudler, that is sprayed on and then fused to the base metal. The resultant coating is hard, glossy, nonporous and smooth. It resists most acids, alkalies and solvents to 210°F, even higher for certain pre-evaluated conditions.

Choice of metals. It can be readily applied as an interior or exterior coating to such metals as mild steel, cast iron, stainless steels, Hastelloys, bronze and copper.

Variety of equipment. You'll find that Pfaudlon 301 is well suited to protecting many kinds of equipment—storage tanks, open vessels, pumps and pump parts, blowers, agitators and baffles, valves, filter parts, columns and fume ducts, to name a few. And because this is a spray-type coating, the handling of complex shapes presents no problem.

Available two ways. You can put the corrosion resistance of Pfaudlon 301 to work two ways:

1. Specify it when ordering new fabricated equipment from Pfaudler.
2. Extend the service life of existing equipment by having it custom coated. Ten firms throughout the country are licensed by us to provide this custom coating.

More facts. Bulletin 1007, *Pfaudlon 301 Plastic Coating by Pfaudler* tells all — what it is, recommended services, how applied, and who is licensed to apply it. For a copy, or answers to your questions, write to: Pfaudler Division, Dept. PTJ-51, Rochester 3, New York.

*Patent applied for
†Registered trademark for chlorinated polyether manufactured by Hercules Powder Company.

PFAUDLER PERMUTIT INC.
Specialists in FLUIDICS...the science of fluid processes

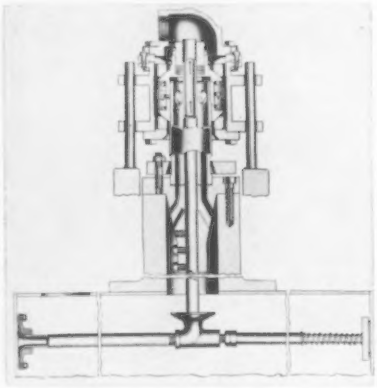
*FLUIDICS is the Pfaudler Permutit program that integrates knowledge, equipment and experience in solving problems involving fluids.

to 0.8 to 2.8 per cent. Hydraulically, the screen is designed to handle a maximum flow of 125 g.p.m.

A 3 h.p. 1200 r.p.m. motor is recommended and preferably some speed changing means, such as an inexpensive variable speed transmission to give a 600 to 1200 r.p.m. rotor speed range. Six sets of screen plates sizes are normally furnished. Improved Machinery, Inc., Nashua, N. H.

Rotary Syphon for P.M. Dryers Claims Heat and Power Gains

In announcing a rotary syphon for dryer rolls of paper machines the Johnson Corp. claims an important



breakthrough in condensate drainage. Development of this syphon had a threefold objective: to achieve maximum temperature along the face of the roll; reduce horsepower demand; and cut maintenance generally. It can be installed on new or existing paper machines, with either open or enclosed gearing.

To evacuate condensate from dryer rolls more effectively, the syphon employs a new concept of pick-up design. This holds the film of condensate to a minimum, permitting a more efficient transfer of heat units from the steam to the dryer shell. Pick-up fitting can be located at any point along the shell, to keep temperatures uniform along the face.

By eliminating weight of excess water inside the roll the Johnson Rotary Syphon claims to reduce the amount of horsepower required to turn the roll. Better condensate removal also cuts down on prolonged, or unnecessary, "cascading" and the undue bearing wear.

To install a syphon, there is no need to get inside the roll, nor is there internal drilling or tapping required. The pick-up fitting is inserted right through the manhole. For dryer rolls with handholes only there is even an alternate version which can be inserted through the journal.

The rotary syphon is engineered for installation with the Johnson Rotary Pressure Joint. The rotary joint is concerned with getting steam into the roll and providing passage out for the condensate. The rotary syphon takes over inside the roll, extracting maximum drying effect out of the heat units contained in the steam. Johnson Corp., Three Rivers, Mich.

Vinyl Plastic Resin Modifies Coating Compounds

A vinyl plastic resin, Pliovic M-70X, has been developed specifically as a modifying material for coating compounds by the Chemical division of The Goodyear Tire & Rubber Co., Niagara Falls, N. Y. The resin is designed to lower the viscosity of liquid plastic molding compounds within practical processing limits, according to the company.

Compounds made with the new resin have better flow characteristics, improved stability and can be produced at lower cost, it is reported.

The resin's relatively small particle size allows latitude in compounding without settling from the plastisol paste and increases adaptability of the resin in coating compounds which must pass through a fixed clearance in processing equipment. Pliovic M-70X is packaged in 50-pound multiwall bags and is available in truckload quantities.

Variable Axial Flow Fans Have Snap-Out Blades

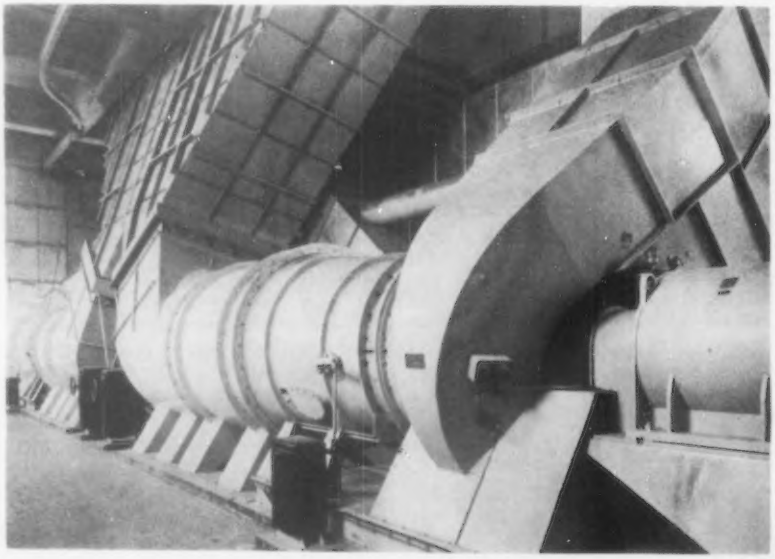
Variax, Danish designed and engineered variable axial flow fans, will be available in the U.S. for the first time, in standard and custom-built units, for use as induced, forced draft or cooling fans, according to an announcement by Novenco Inc.

Said to attain higher than average rotational speeds with complete safety, standard Variax fans are controlled during operation by variation of the blade angle, thus assuring constant speed and minimizing power used in regulation. There is interchangeability of snap-out blades with variety of fin structures. Both horizontal and vertical models are available. Short overall length is claimed to reduce by 50 per cent the installation space required by most similar industrial fans.

The fan hub is enclosed to prevent penetration of impurities into the regulating components. Blades are cast of special alloy and provided with reinforced "wearing" edges. Shaft is of high-quality steel and dimensioned so that the critical speed of the fan-wheel assembly exceeds the operating speed of the fan by at least 20 per cent.

Ball and roller bearings are used throughout. All operating parts are easily accessible.

Variax fans are constructed in standard sizes for capacities from 50,000 to 1,100,000 c.f.m. larger sizes produce pressures up to 25 in w.g., under NTP conditions. Variax fans operate to maximum temperatures of 400°F. For operation to 650°F. models of special alloys are also available. Novenco Inc., 69 Fifth Ave., New York, N. Y.



Prices of Fibers

MARKET WOOD PULP

SECOND QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	$90.00/ —	$90.00/ —	$90.00/ —
Bleached Gw'd.	97.50/100.00	97.50/100.00			
Kraft, Blchd.	‡140.00/150.00	‡140.00/150.00	150.00/ —	150.00/ —	150.00/ —
Kraft, Blchd. Hdwd.	135.00/140.00		140.00/ —		
Kraft, Semi-bleached.	130.00/140.00				
Kraft, Unbl.	117.50/125.00	125.00/ —	125.00/130.00	125.00/ —	
Sulphite, Blchd.	‡135.00/140.00	‡135.00/140.00	140.00/ —	140.00/ —	140.00/ —
Sulphite, Bl. Hdwd.	135.00/ —				
Sulphite, Unblchd.	125.00/ —	125.00/ —	125.00/ —	125.00/ —	125.00/ —
Sulphite, Unb'l. Gl'sn.		140.00/ —	134.00/ —		
Soda, Blchd.	130.00/135.00	130.00/135.00			

‡ Depending on Brightness.

COTTON LINTERS

F.O.B. OIL MILLS PER CWT
WEEK ENDED APRIL 18

	Atlanta	Memphis	Dallas	Los Angeles
Grade 1	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	n.a.	8.00/7.50
3	$7.50/7.00	$7.50/7.25	$7.50/7.00	7.25/6.75
4	7.00/6.25	6.50/6.25	6.50/6.25	6.50/6.25
5	6.25/5.75	5.75/5.50	6.00/5.50	5.75/5.50
6	5.75/4.75	5.25/5.00	5.25/5.00	4.50/4.25
7	4.75/4.25	4.50/4.25	4.75/4.00	n.a.

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	April 24	April 24	April	April
No. 1 Mixed Paper	$ 7.00/ 9.00	4.00/ 7.00	6.00/ —	12.00/ —
No. 1 News	12.00/ 13.00	11.00/ —	11.00/ —	15.00/ —
Overissue News (Lg. size)	11.00/ 13.00	9.00/ 11.00	16.00/ —	18.00/ —
Mill Wrappers	19.00/ 22.00	9.00/ 11.00	9.00/ —	13.00/ —
Old Corrugated Containers	17.00/ 18.00	15.00/ 15.50	18.00/ —	16.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	28.00/ —	50.00/ —
New Double Kr. Ld. Corr. Cuts	27.50/ 30.00	30.00/ 32.50	30.00/ —	27.50/ —
(Semi-chem. medium)	45.00/ —	42.50/ —	42.50/ —	— / —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	52.50/ —	— / —
New Br. Kraft, Env. Cuts	65.00/ 70.00	65.00/ 70.00	47.50/ —	45.00/ —
New Br. Kr. Bag Waste Prntd.	50.00/ 55.00	50.00/ 60.00	47.50/ —	35.00/ —
New Br. Kr. Bag Waste Unprintd.	55.00/ 60.00	60.00/ 65.00	55.00/ —	42.50/ —
No. 1 Groundwood Shvs.	25.00/ 30.00	20.00/ 25.00	10.00/ —	27.50/ 30.00
White Newsblanks	42.50/ 45.00	35.00/ 40.00	30.00/ —	55.00/ —
No. 1 Soft White Shvs.	55.00/ 60.00	55.00/ 60.00	50.00/ —	75.00/ —
Super Soft White Shvs.	65.00/ 75.00	70.00/ 80.00	60.00/ —	— / —
Hd. White Shvs.	75.00/ 80.00	80.00/ 90.00	75.00/ —	80.00/ —
Hd. White Env. Cuts	90.00/ 95.00	100.00/105.00	80.00/ —	103.00/ —
Col. Tab. Cards	40.00/ 42.50	40.00/ 42.50	35.00/ —	35.00/ —
Manila Tab. Cards	57.50/ 60.00	55.00/ 60.00	55.00/ —	65.00/ —
No. 1 Col. Ledger	32.50/ 35.00	30.00/ 35.00	35.00/ —	18.00/ —
White Ledger	45.00/ 50.00	42.00/ 47.00	45.00/ —	40.00/ —
Mixed Book & Mag.†	— / —	— / —	8.00/ —	— / —
No. 1 Books‡	15.00/ 17.50	18.00/ 22.00	22.50/ —	8.00/ —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

BIF POSITIVE CONTROL OF MATERIALS FLOW

Need completely slaked, homogeneous mixtures? Do shut-downs for grit and clinker removal hold up production? Do hot, dust-laden vapors foul up your feeder? Do you have excessive bearing trouble . . . causing leaks and costly maintenance? B-I-F Pug Mill Slakers save lime, time and trouble...add profits to your process!

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TF

PAPER MACHINE SUPERINTENDENT

Excellent opportunity for qualified applicant with practical paper making experience in Fine Papers—Bond, Ledger, Offset, Mimeo, etc. High speed machines. Must have strong organizational and leadership ability. Salary open.

Mill located about ten miles from Center Philadelphia in Montgomery County, Pennsylvania, in an area with wide choice of desirable living conditions.

Send resume including educational and past work history to:

Mr. Paul R. Dugan,
Personnel Director
Hamilton Paper Company
Miquon, Pennsylvania

M-8

WANTED—Boss Machine Tender for Pacific Coast Mill making newsprint and specialties. Address Box 61-80 care Paper Trade Journal. M-8

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R. & D. CHEMIST

with Strong Background in

PAPER TECHNOLOGY

and Interest in Chemical Applications to Paper, Films, Foils, Etc.

TO $10,000 START

Plus Liberal Profit Sharing and Bonus

Our client, a leading Midwest chemical company internationally known in the field of volatile corrosion inhibitors, is expanding the new product development program of its industrial division to broaden the base of its activities in the area of the application of coatings and impregnations to paper, film, foil, laminates, etc.

Though very well staffed with organic chemists in its other divisions, Client company does not now have a technician with paper background. The new man will be the expert in this area, with a strong voice in the directionalizing of R. & D. activities involving paper and similar substances.

Client company thinks basically in terms of patentable applications and products—and liberally rewards its R. & D. people for development of saleable items. Accordingly, this position offers tempting financial potentials to a creative-minded paper chemist capable of developing commercially feasible applications of chemicals to flat, flexible materials.

Make initial inquiry in duplicate to Mr. George M. Sunday personally, enclosing two pictures and two copies of comprehensive resume detailing vital statistics; education; social, religious and professional affiliations; and chronological treatment of professional and/or business background and experience. Full confidence guaranteed.

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Pulp, Paper, Packaging & Allied Industries

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M-1

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ELECTRICAL MAINTENANCE SUPERVISOR

Immediate opening for graduate Electrical Engineer with pulp and paper mill maintenance experience. Bleached sulphate board mill, located in the South. Salary open, depending upon qualifications. All replies confidential. Send complete resume to Box 61-89, Paper Trade Journal, 49 West 45th Street, New York 36, New York.

M-22

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1—24" 5-color Kidder Celloprinter
1—24" 4-color Kohlbach Flexo Press with Stanford Web Guide and Tension Controls
1—26" 3-color gravure press
1—30" 6-color Kidder celloprinter
1—32" 4-color Potdevin flexo tailprinter
1—33" 6-color Modern Clipper Flexo Press
1—33" 4-color Wolverine Hydro-Printer
1—34" 4 Color Wolverine—Poly Press
1—36" 6-color Cottrell Heinrich Flexo Press
1—37" 2 color flexo t/printer
1—40" 4-color W & H Flexo Press
1—41⅜" 5-color Staude Roto Gravure Press
1—42" 4-color Crawford Flexo Press
1—42" 4-color Hudson Sharp Flexo Press
1—48" 6-color Heinrich 4 Flexo 2 Gravure
1—60" 4-Color Gravure Press

CAMACHINES

1—162" Type 10 Model 19 Shear Cut
1—102" #18
1—82" Type 12
1—72" Type 10 6A Anti Friction Bearings
1—72" 10-10A
1—62" 10-11A
1—62"—50"—42" type 6
1—52", 10 5-A
1—62"—32" 26-3A Duplex
1—52" 24-7 Duplex
1—50" 28-3D Duplex

OTHER SLITTERS

1—102" Langston, 60" Rewind Capacity
1—82" & 1—92" "8A" Langstons
1—40" & 1—52" Fales Model "B"
1—52" Meisel (Shear Cut)
1—50" & 2—40" Beck Razor Blade slitters
1—40" & 1—60" Kidder SH 40" rewind
1—24" 1—30", 1—36" & 1—40" Kidder S.L. & 1—36" SLN

POWER PAPER CUTTERS

SEYBOLDS:	64" precision	
	56"-Dayton	44"-Dexter
	50"-Precision	44"-C&P
		44"-Oswego
	44"-Mod. "CF"	44"-10Z
75"-Oswego	40"-Mod. "CF"	38"-Oswego
	50"-C&P	32"-Oswego
57"-Oswego	50"-Dexter	32"-3Y

MISCELLANEOUS MACHINES

2—PO2 Roto Bag Machines
3—35" 2 color Bagprint Flexo T/printers
2—Bagprint B-10 F&S Bag machine
1—#4 Lockport F&S B/Machine 17½ x 25
1—Hansel Bag Machine—3 color printer
1—Simplex 7-24 Pouch Machine, E/eye
1—Multipath Bag Machine — 4 Color Holweg Printer
1—Strachan & Henshaw Bag Machine—2-color Aniline Printer
1—Model 4 Potdevin Sack Machine
1—36" Beck CSH L/boy—E/eye
1—45" CCSH Beck Sheeter ready for E/eye
1—36" CCSH Beck Sheeter with E/eye
1—90" M&W Sheeter O/lapping del. & Layboy
5—Hamblets 100-72-64-60" w/layboy
1—84" Hamblet Duplex Heavy Board Sheeter
1—78" M&W Sheeter & Layboy
1—42" Reverse Roll Coater
2—38" x 24" 4-Post Seybold Die Presses
3—Sheridans 50 x 24 44 x 20 36 x 18
Embossers 48" 55" Waldron & 50" Heavy Duty Hudson Sharp Tinter-Embosser
1—34" Waxer with 4-Ton Refrig. Unit
1—40" International Paper Box Machine Co's Sheet-Fed Carton Waxer
1—60" Perkins Squeeze roll waxer
1—Johnstone Knife Grinder
1—20" H/S gift wrap folder

M-1

TECHNICAL SPECIALIST
BLEACHING

We are looking for a man to work with our pulp and paper sales division to give technical assistance in the marketing and sale of bleaching systems and equipment. We would also expect that this man could provide guidance in the design and field development of these systems and equipment in addition to keeping abreast of developments and competition in the bleaching field.

We require either a chemical engineer or a pulp and paper school graduate with at least five years experience in bleaching processes. The successful applicant will be based at our Stamford headquarters and must be willing to travel.

This position pays an excellent salary plus bonus to the individual who meets our specifications.

Please send complete resume including salary requirement to:

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M-1

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For Consulting Engineers Office in London

A SENIOR PULP AND PAPER ENGINEER—Preferably with academic qualifications and experience in the design and engineering involved in Pulp and Paper Mills. Operating experience an advantage.

Applications which will be treated in strictest confidence, should include full details of experience, qualifications and age.

A high level of remuneration would be offered to suitable applicant.

Non-contributory Pension/Life Assurance benefits available after qualifying period.

Apply Box 61-85, Paper Trade Journal. M-1

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Young mechanical or power engineer, preferably with some industrial power plant experience, wanted for integrated boxboard mill-carton plant operation in Central Illinois. Good possibilities for right man. Paid Pension—Health Welfare Plans—other benefits. State experience—salary desired, etc. Apply Box 61-94 care Paper Trade Journal. M-1

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Opportunity in San Juan, Puerto Rico, for experienced man as p.a. for integrated U. S. paper manufacturer. Spanish and English required. Reply with details Box 61-91, Paper Trade Journal. M-1

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General or Paper Mill Superintendent

40 years' experience, 35 in supervision, 25 as mill supt. on printing bond, board, and converting, also printing press operations. Retired early but wish to work another five years either operating, training, or consulting; foreign or domestic. Available at once short or long periods. Write Box 61-76 care Paper Trade Journal. M-8

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1—S&H 3½" to 10¼" face, 6" to 13" Tube Pull
1—G&H 3 ply Tuber—SOM—Flat or Gusseted Bags; tube length 9" to 35"

BACK STANDS—2 DECK

2—Stevens 10 roll (5 running—5 loading) for 46" max. roll dia. Complete including elec. hoist for lower rolls. New 1959.

BEATERS

2—3000# Downingtown 60" x 67" roll; like new
1—1500# Dilts Breaker Beater; roll 54" x 64"

CALENDER STACKS

1— 80" P & J 7 roll; heavy duty
2— 82" & 86" Lobdell five roll
1—104" B-C 8 roll
1—115" B-C 7 roll
1—124" Downingtown 5 roll
1—124" Downingtown 6 roll
1—126" Farrell 8 roll—w.c. bearings

CHIPPERS

1— 96" Murray 6 knife; A-F Brng

COATERS

1— 24" Waldron Coater & Embosser
1— 60" Egan Air Knife—New 1956
2— 65" & 76" Mayers

COMPLETE PAPER & BOARD MACHINES

3—Sandy Hill 81" trim single cyl. Tissue
1—M & W 72" Trim Fourdrinier paper machine
1—B-C 100" 7 cyl. Board Machine Complete
1—M & W 72" Trim Yankee Fourdrinier
1—Rice Barton 84" Fourdrinier

CYLINDER MOLDS

1—104" face x 36" dia
8—114" face x 36" dia. w/rubber couches
8—124" face x 36" dia w/rubber couches

CYLINDER WET ENDS

1—Single cylinder; 99" face x 48" dia.
1—114" 7 cyl. Wet End, complete
1—124" 7 cyl. Wet End, complete

DRIVES—ENCLOSED RIGHT ANGLE

17—25-75 h.p.—complete with clutches & cone pulleys
38—1 h.p.-125 h.p. parallel gear boxes

DRYERS—HYDROSTATICALLY TESTED

24" Dia.:
37—46" face; Chrome plated
1—156" face w/gear and steam joint

28" Dia.:
3— 70" face w/gears & bearings
3— 73" face w/gears & bearings
6— 76" face w/gears & bearings
4—84" face w/accessories

36" Dia.:
1— 42" face
2— 44" face; 2—46" face
3— 70" face w/gears & bearings
11— 72" face w/gears & bearings
1— 74" face Lukenweld w/A-F Brng
8— 75" face w/gears & bearings
26— 76" face; complete section
9— 76" face w/gears & bearings
2— 77" face w/gears & bearings
1— 78" face w/gears & bearings
2— 80" face
5— 84" face
11— 84" face; complete section
7— 94" face; complete section
1— 96" face
1—138" face
10—160" face

42" Dia.:
23— 73; 74; 76" face; complete section
46— 96" face w/gears, frames & bearings
1—120" face
1—160" face

48" Dia.:
49— 46" face; chrome plated
12— 82" face; complete section
3— 84" face
7— 94" face
1— 96" face
12— 98" face—complete section
19—106" face w/gears & bearings
2—110" face w/gears & bearings
10—123" face w/gears, frames & bearings
1—128" face

EMBOSSERS

1— 80" Hudson Sharp; A-F Brng
2— 62" Textile Machinery Co., w/drives

EXTRACTORS ROLLS—DOWNINGTOWN

1—128" face x 24" dia.—complete section

FELT CONDITIONERS—VICKERY

1—New Bird—218" Max. cleaning area
1—New Bird—166" Max. cleaning area

FLAT SCREENS

1— 12 plate IMPCO w/Dunbar Drives
8— 14 plate IMPCO—Bronze Vats S.S. Plates

FOURDRINIER SECTIONS

1—Beloit Yankee Fourdrinier section—wire 132" x 47 ft. 4". Oper 870 f.p.m. 132" x 10 ft. Yankee Dryer also available.

"HYDRAPULPER"

1—Dilts 16 ft. Batch type complete w/125 h.p. motor—CI Sectional Tub

INLETS & HEADBOXES

1—131" Valley w/10" distributing roll; SS lined

JORDANS

2—Appleton #1 w/A-F Brng
1—Horne w/A-F Brngs
4—Shartle Miami #2 w/A-F Brngs
1—E. D. Jones #4 Imperial A.F. Brng.

LAYBOYS

1—Hamblet 124"—gear motor operated
1—Hamblet 88"—gear motor operated
1—Beck 65" w/auto lowering device

MOTORS 3 PH 60 CYCLE

1—100 h.p. GE; 440 v; 695 r.p.m.
1—300 h.p. West; 2200 v; 503 r.p.m.
1—350 h.p. GE; 2200 v; 720 r.p.m.: Synch

PAPER MACHINE DRIVES

1—De Laval 100 h.p. steam turbine w/reducers

PULP MILL EQUIPMENT

1—Lannoye #1 Pulper
1—Murray 2 deck Chip Screen, 5 ft x 14 ft.

PUMPS—OPEN IMPELLER

47—Centrifugal Stock and Water Pumps
1—Shartle 8 x 18 Duplex

REELS

1—100" Kohler automatic two arm unwind reel; 60" dia rolls; new condition
1—109" two bowl upright
1—123" Beloit—2 bowl
1—126" Beloit Aldrich surface drive type
1—146" B & S pope type w/Reliance drive

REFINERS

1—Jones Fibremaster — SS Filling—200 h.p. motor & controls
2—#1 Claffin; A-F Brng
1—24" Downingtown Weiner; new
2—36" Bauer, Model 185 w/2—75 h.p. motors
3—36" Bauer Model 185 with 2 100 h.p. motors
1—Dilts #4 Hydrafiner—AF Brng.
1—Dilts 36" Classifiners AF Brng
2—#4 Shartle Cyclifiner A.F. Brng.

ROLLS

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DICALITE®

TECHNICAL REPORT

DICALITE DEPARTMENT • GREAT LAKES CARBON CORPORATION • 612 SO. FLOWER ST., LOS ANGELES 17, CALIFORNIA

New Dicalite BULK-AID for Paper Products

Dicalite BULK-AID is a new development in inorganic fillers, with particle size range and distribution carefully controlled to give maximum bulking characteristics in paperboard and paper products. BULK-AID has the lowest apparent or bulk density of any known mineral filler for papermaking use, thus providing required caliper at lower weights. One example is that of a 40-point groundwood sheet whose weight was reduced from 29.2 lbs/ft³ to 27.3 lbs/ft³ by the addition of 10% BULK-AID.

The light weight and bulking characteristics of BULK-AID make it especially suitable for use in paperboard; its high brightness and excellent retention are also of considerable value. BULK-AID lowers the furnish cost and increases pulp mileage in top liners for patent white paperboards. Its brightness and opacity raise the quality of underliners at the same time it extends the furnish.

Dicalite BULK-AID is an amorphous mineral, technically an aluminum silicate, produced from a volcanic mineral known as perlite by a special process developed by Great Lakes Carbon Corporation. BULK-AID is inert, insoluble in water, acid or mild alkalies. It is grit-free, and exhibits no reaction with alum in sizing or with other papermaking chemicals. It is readily dispersed in any furnish, does not cause foam, and will not fill felts.

Among BULK-AID's physical characteristics are these:

Color: White

Average G.E. Brightness: 83

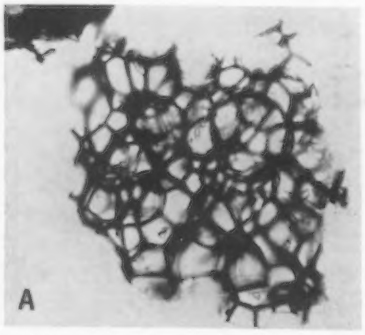
Loose weight: 4½ lbs/ft³ average

Bulk densities in paperboard: 15 lbs/ft³ average.

Particle size: 80% less than 10 microns

Extensive testing has shown BULK-AID to be successful in actual paper mill production. Most of these tests were on cylinder machines for paperboard production, but limited tests indicate its value in many slow speed fourdrinier applications.

Your Dicalite engineer will be glad to discuss BULK-AID with you and to advise on possible product applications in your own plant.



When perlite is crushed and then suddenly heated to the proper point in its softening range, it pops like corn into particles like that shown in photomicrograph A, containing a myriad of microscopic sealed cells. The size of the original particle and the application of heat are both important, and are critically controlled. This is the expanded material from which BULK-AID is produced. Controlled milling and air classification by an exclusive Great Lakes Carbon Process are the major steps in making BULK-AID, typical particles of which are shown in photomicrograph B.

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Gordon G. Halvorsen

DICALITE'S "MAN ON THE SPOT"

The development of Bulk-Aid, to meet the industry's need for an extremely low density bulking agent, was initiated by Gordon Halvorsen, Product Sales Manager for Dicalite, and he has been closely identified with its tests and product application work from the beginning.

Halvorsen has an extensive background in research and development work, beginning with his graduation from the University of Minnesota with a degree in Chemical Engineering. Prior to joining Great Lakes Carbon in 1940, Gordon had been engaged in technical and laboratory work in the pharmaceutical, corn processing and water treatment fields, and continued his research work in the Dicalite product laboratories for the first 5 years of his association.

Halvorsen is the author of several technical papers, and has contributed to both paper industry and brewing publications. Among his technical society memberships he lists TAPPI, American Society of Sugar Beet Technologists, Master Brewers Association of America, and others in the brewing and drycleaning fields.

NEW DATA SHEET

on Dicalite *BULK-AID* gives more complete information on physical and chemical properties, and on its advantages in papermaking. Write for your copy to Dicalite Dept., 612 So. Flower St., Los Angeles 17, Calif.